

**Terminal Evaluation of the UNEP/GEF Project
“LGGE Promoting Energy Efficiency and Renewable
Energy in Buildings in Jamaica, GEF ID: 4167”
(2013-2020)**



Evaluation Office of the United Nations Environment Programme

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Picture Credits:

Front cover: Net-Zero Energy Building, University of the West Indies (UWI), Mona Campus

Page 63: Architectural drawing, front elevation of the NZEB

Page 67: Front façade of the ZNEB (adapted from the cover page photo)

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LGGE Promoting Energy Efficiency and Renewable Energy in Buildings in Jamaica

GEF ID 4167

05/22

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This Terminal Evaluation was prepared for UNEP by Mari-Louise van der Walt, as an independent consultant.

The evaluator would like to express their gratitude to all persons met and who contributed to this evaluation, as listed in Annex II of this report.

The evaluation team would like to thank the project team and in particular Mr. Kevin Rodriguez (Project Manager), Professor Anthony Clayton (Principal Research Director) and Mr Asher Lessels (UNEP Task Manager) for their contribution and collaboration throughout the evaluation process. Sincere appreciation is also expressed to the members of the Project Steering Committee who took time to provide comments to the draft report.

The evaluation consultant(s) hopes that the findings, conclusions and recommendations will contribute to the successful finalisation of the current project, formulation of a next phase and to the continuous improvement of similar projects in other countries and regions.

BRIEF CONSULTANT BIOGRAPHY

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ABOUT THE EVALUATION

Joint Evaluation: No

Report Language(s): English

Evaluation Type: Terminal Evaluation

Brief Description: This report is the Terminal Evaluation of the UNEP/GEF Low Greenhouse Gas Emissions Promoting Energy Efficiency and Renewable Energy in Buildings in Jamaica project implemented between 2013 and 2020. The project's overall development goal was to increase energy efficiency and the use of renewable energy in the building sector in Jamaica thus reducing energy consumption and greenhouse gas emissions. The evaluation sought to assess project performance (in terms of relevance, effectiveness and efficiency), and determine outcomes and impacts (actual and potential) stemming from the project, including their sustainability. The evaluation has two primary purposes: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote learning, feedback, and knowledge sharing through results and lessons learned among UNEP, and the relevant agencies of the project participating countries.

Key words:¹ Building Codes; Building Standards; Caribbean; Climate Change; Energy Efficiency; Energy Efficiency in Buildings; Energy Efficiency Benchmarks; GEF; GEF Project; Green Buildings; Project Evaluation; Renewable Energy; Terminal Evaluation; TE; tropical climate; Small Island Developing States; SIDS; Small Islands; Sustainable Building Practices; Zero Net Energy Building (ZNEB)

Primary data collection period: 4 January – 11 March 2022

Field mission dates: N/A. Due to the continued COVID-19 situation in Jamaica and the inherent uncertainty of the pandemic, the UNEP Evaluation Office chose not to organise a field mission in Jamaica.

¹ This data is used to aid the internet search of this report on the Evaluation Office of UNEP Website

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List of acronyms

BoS	Bureau of Standards
CARICOM	Caribbean Community
CARILEC	Caribbean Electric Utility Service Corporation
CASJ	Caribbean Academy of Sciences, Jamaica
CCCCC	Caribbean Community Climate Change Centre
CERE	Centre of Excellence for Renewable Energy
CIC	Construction Industry Council
EA	Expected Accomplishment
ECE	Energy Conservation and Efficiency
EE	Energy Efficiency
EEBC	Energy Efficient Building Code
EII	Energy Intensity Index
EOU	Evaluation Office of UNEP
ERA	Environmental Regulatory Authority
ESL	Energy Saving Light
GEF	Global Environment Facility
GHG	Greenhouse Gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GOJ	Government of Jamaica
IBC	(American) International Building Code
ICC	International Codes Council
IDB	Inter-American Development Bank
IECC	international Energy Conservation Code
IMAJ	Incorporated Masterbuilders Association of Jamaica
ISD	Institute for Sustainable Development
JGBC	Jamaica Green Building Council
JHTA	Jamaica Hotel and Tourism Association
JIA	Jamaica Institute of Architects
JIE	Jamaica Institution of Engineers
JPSCo	Jamaica Public Service Company Ltd
LGGE	Low Greenhouse Gas Emissions
MHEW	Ministry of Housing, Environment and Water
MoU	Memorandum of Understanding
MSTEM	Ministry of Science, Technology, Energy, and Mining
MTR	Mid Term Review
MTWH	Ministry of Transport, Works, and Housing
MW	Megawatt

MWLECC	Ministry of Water, Land, Environment, and Climate Change
NEPA	National Planning and Environment Agency
NGO	Non-Governmental Organisation
NHT	National Housing Trust
NZEB	Net Zero Energy Building ²
OPDEM	Office of Disaster Preparedness and Emergency Management
OPM	Office of the Prime Minister
PAC	Project Advisory Committee
PCJ	Petroleum Corporation of Jamaica
PEEREBJ	Promoting Energy Efficiency and Renewable Energy in Buildings in Jamaica
PIOJ	Planning Institute of Jamaica
PMU	Project Management Unit
PoW	Programme of Work
PPG	Project Preparation Grant
PRC	Project Review Committee (internal UNEP committee that approves new projects)
PSC	Project Steering Committee
ProDoc	Project Document (must be reviewed by PRC before any project can be undertaken, with the approval of the managing division director)
PV	Photovoltaic
RE	Renewable Energy
SBCI	Sustainable Buildings and Climate Initiative (UNEP)
SC	Sustainable Consumption
SD	Sustainable Development
SDG	Sustainable Development Goals
SIDS	Small Island Developing States
SRC	The Scientific Research Council
ToC	Theory of Change
ToR	Terms of Reference
UNEP	United Nations Environment Programme
UTech	The Institute of Sustainable Energy, University of Technology, Jamaica
UWI	University of the West Indies
ZNEB	Zero-net Energy Building

²Used interchangeably in different project documents with ZNEB (refer last acronym)

PROJECT IDENTIFICATION TABLE

Table 1. Project Identification Table

GEF Project ID:	4167		
Implementing Agency:	UNEP	Executing Agency:	Institute for Sustainable Development (ISD) at University of the West Indies (UWI), Mona
Relevant SDG(s) and indicator(s):	<p>SDG goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all. Targets 7.2: By 2030, increase substantially the share of renewable energy in the global energy mix; and 7.3: By 2030, double the global rate of improvement in energy efficiency.</p> <p>SDG goal 13: Take urgent action to combat climate change and its impacts. Specifically Targets 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries; 13.2: Integrate climate change measures into national policies, strategies and planning; 13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.</p>		
Sub-programme:	Sub-programme 1.Climate Change	Expected Accomplishment(s)³:	(b): "That countries make sound policy, technology, and investment choices that lead to a reduction in greenhouse gas emissions and potential co-benefits, with a focus on clean and renewable energy sources, energy efficiency and energy conservation."
UNEP approval date:	January 2012	Programme of Work Output(s):	Programme of work 2012-2013, sub-programme 1: climate change.
GEF approval date:	9 November 2012	Project type:	Full Size Project
GEF Operational Programme #:	GEF IV	Focal Area(s):	Climate Change Mitigation
		GEF Strategic Priority:	CC-SP-1: Building EE
Expected start date:	February 2013	Actual start date:	May 06, 2013
Planned completion date:	31 January 2017	Actual operational completion date:	31 March 2020
Planned project budget at approval:	USD 7,461,000	Actual total expenditures reported as of 10 March 2022:	USD 7,491,146.14 ⁴

³ UNEP, Medium-term Strategy, 2010 – 2013. <https://wedocs.unep.org/bitstream/handle/20.500.11822/12624/wp.03-unep-mts.pdf?sequence=1&isAllowed=1>

⁴ Consisting of reported expenditure against GEF budget (as provided by the FMO in March 2022) and co-financing as per most recent co-finance report dated June 2019 (corrected). Financial closure was extended to 31 March 2021.

GEF grant allocation:	USD 2,361,000	GEF grant expenditures reported as of 10 March 2022:	USD 1,811,817.14 ⁵	
Project Preparation Grant - GEF financing:	USD 30,000	Project Preparation Grant - co-financing:	USD 50,000	
Expected Full-Size Project co-financing:	USD 5,100,000	Secured Full-Size Project co-financing:	USD 5,679,329 ⁶	
First disbursement:	May 21, 2013 ⁷	Planned date of financial closure:	July 2017 ⁸	
No. of formal project revisions:	2	Date of last approved project revision:	17 May 2019	
No. of Steering Committee meetings:	3 ⁹	Date of last/next Steering Committee meeting:	Last: 21/05/2019	Next: N/A
Mid-term Review/ Evaluation (planned date):	Second semester of 2015	Mid-term Review/ Evaluation (actual date):	Not Done	
Terminal Evaluation (planned date):	January 2017 ¹⁰	Terminal Evaluation (actual date):	September 2021 – April 2022	
Coverage - Country(ies):	Jamaica	Coverage - Region(s):	Caribbean	
Dates of previous project phases:	N/A	Status of future project phases:	N/A	

⁵ Final figure as provided by the FMO on 9 March 2022

⁶ Last available co-finance report dated 30 October 2019 showed USD 5,669,555 in co-finance realised. A further update confirmed the total as USD 5,679,329 as detailed under *Section E: Financial Management*.

⁷ Date of payment instruction for 1st cash advance as documented in the PIR. This differs from TOR and Progress report. To be confirmed with FMO.

⁸ As indicated in the original PCA, financial closure was July 2017 and technical completion date 31 January 2017. An extension was granted through to 31 March 202 for technical closure and 31 March 2021 for financial closure.

⁹ Information of three PSC meetings shared held in 2016, 2017 and 2019.

¹⁰ The initial date was anticipated to follow on project completion. The project was extended, and the formal planned date was not amended to reflect the extension.

EXECUTIVE SUMMARY

Project background

1. Jamaica, an independent island state located in the Caribbean, is heavily dependent on imported fossil fuels, with petroleum imports the primary source of energy for electricity production. This high reliance on fossil fuels for electricity generation also contributes to a high grid emissions factor¹¹ (0.705 tCO₂/MWh)¹².
2. The fluctuating costs of hydrocarbon imports combined with various challenges of policy and institutional coordination exposed the country to high electricity costs and tariffs. Despite high prices, electricity is consumed inefficiently, making Jamaica's energy use per capita high compared to other developing nations.
3. The Jamaica National Energy Policy (2009–2030) incorporated issues of energy supply and demand and notably included increased use of renewable energy and improved energy efficiency and energy conservation among the primary opportunities for advancing energy security and sustainability.
4. Buildings globally represent a large consumer of energy. This is also the case in Jamaica, where – at the time of design – electricity consumption in buildings were estimated to contribute as much as 55% of the electricity used in the country. Consequently, significant carbon dioxide (CO₂) emissions are attributed to energy use in buildings. In 2004, building related emissions were estimated at 8.6 billion tons and expected to almost double by 2030 without intervention.
5. In a hot, humid climate such as Jamaica's, significant energy is consumed to achieve acceptable comfort levels and most buildings have very high cooling loads. Though tropical and sub-tropical climates present technical challenges, the building sector in such regions has considerable potential for positive change – to become far more efficient in terms of resource use, less environmentally intensive, and less costly – with the introduction of suitable innovations and design solutions.
6. At the time of project design, suitable technologies and solutions were already available to cut energy consumption in both new and old buildings by 30 to 50% without significantly increasing investment costs. Smart design practices, improved insulation, low energy appliances, high efficiency ventilation and heating/cooling systems, as well as changing the behaviour of building users, were identified as typical interventions that could all be market-driven and contribute significantly to energy savings.
7. A shift to greater energy efficiency and renewable energy in buildings in Jamaica provides an opportunity to reduce energy demand and carbon emissions while also contributing to cost savings, improved economic productivity, job creation and social development.

Project approach

8. The project titled "*Promoting Energy Efficiency and Renewable Energy in Buildings in Jamaica*" was conceived to demonstrate (i) the extent to which the energy requirements of buildings in (sub-)tropical climates can be reduced and (ii) the potential energy and cost savings possible from more sustainable energy practices – targeting a zero net energy building (ZNEB) as one of the demonstration projects for the project.

¹¹ Grid Emission Factor refers to CO₂ emission factor (tCO₂/MWh) which will be associated with each unit of electricity provided by an electricity system.

¹² Jamaica's grid EF as published by the UNFCCC available at: https://cdm.unfccc.int/methodologies/standard_base/2015/sb141.html

9. The project also targeted a strengthening of the policy framework, building on the policy intentions of the National Energy Policy, by promoting (i) far higher standards of energy efficiency, (ii) the increased use of renewable energy sources within the Caribbean built environment, and (iii) supporting the development and implementation of appropriate regulatory and technical tools.
10. The project was conceptualised by the Institute of Sustainable Development (ISD) at the University of the West Indies (UWI) who also served as the Executing Agency.
11. It received a grant of USD 2,361,000 from the Global Environment Facility (GEF) matched by co-finance commitments of USD 5,100,000 from project partners for a total project budget of USD 7,461,000.
12. It was implemented by the United Nations Environment Programme (UNEP) Climate Mitigation Unit, Energy & Climate Branch, Economy Division (i.e. the Implementing Agency).
13. The GEF approved the project for implementation early November 2012 and implementation began in mid-2013. The project was expected to be implemented in 48 months, to end 31 January 2017. It experienced significant delays with the construction and retrofitting of the demonstration buildings, necessitating two, cost-neutral extensions. The project closed in March 2020.
14. The project objective was to “Increase energy efficiency (EE) and the use of renewable energy (RE) in the building sector in Jamaica thus reducing energy consumption and greenhouse gas (GHG) emissions.” To achieve this objective, the project was structured into five project components aimed at advancing the adoption of energy efficient and sustainable energy measures into building practices, namely: technical design, retrofit solutions, zero-net energy building, policy and regulatory framework, and dissemination.
15. As per the GEF and UNEP evaluation guidance, a Theory of Change (TOC) for the project was reconstructed to enable a meaningful evaluation (presented in Section IV of this report). The reconstructed TOC identified seven outcomes for the project, namely:
 - i. Inclusion of advanced EE and RE practices, solutions and technologies in the design, development and renovation of buildings in Jamaica.
 - ii. Increased investments and uptake of demonstrated EE and RE measures in renovated and new buildings in Jamaica.
 - iii. Policy and regulatory environment amended to instruct minimum EE and clean energy requirements for all future buildings and renovations through building codes and standards
 - iv. National plan for retrofitting all suitable existing buildings to the minimum efficiency standards in place.
 - v. Sustainability of clean energy benefits to consumers and the economy secured through a quality supervision system and functional test facilities established.
 - vi. Learnings integrated into various spheres of policy, planning, academic teaching and research programmes as well as building practices in Jamaica.
 - vii. Knowledge management, information sharing, learning, and collaboration networks embedded among key local stakeholders and initiated within the region.
16. These outcomes were intended to set in motion a shift towards more sustainable building practices, prompting (i) large scale adoption of EE and RE technologies and solutions among building professionals and developers in Jamaica, (ii) continual enhancement of policy and regulatory environment towards a zero-net energy building goal for the country, (iii) increased market demand for and investment in high efficiency

and clean energy technologies and solutions in the region, and (iv) improved thermal comfort levels for building occupants across all sectors. In the long term, the expectation is that such a shift would encourage all buildings in Jamaica to incorporate advanced energy efficient and sustainable energy measures, aspiring towards net-zero energy buildings, thus contributing to reduce greenhouse gas emissions from energy use in buildings, in Jamaica and other tropical and sub-tropical regions.

This evaluation

17. This Terminal Evaluation (TE) is undertaken at completion of the *LGGE Promoting Energy Efficiency and Renewable Energy in Buildings in Jamaica* project. The evaluation set out to assess (i) the project performance (in terms of relevance, effectiveness and efficiency), and (ii) outcomes and impacts (actual and potential) stemming from the project – including their sustainability.
18. The evaluation has two primary purposes, namely: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote operational improvement, learning and knowledge sharing through results and lessons learned among UNEP, UWI and ISD. The expectation is therefore that the evaluation will identify lessons of operational relevance for future project formulation and implementation.
19. The evaluation is guided by the Terms of Reference in Annex IX, and undertaken in line with the UNEP evaluation guidelines.
20. The findings of the TE are largely based on (i) a desk review of key project documents at design and implementation stage, (ii) interviews with key stakeholders, (iii) a survey sent to members of the Jamaica Institute of Engineers and Jamaica Institute of Architects and (iv) a video documenting the physical construction of the Zero Net Energy Building (ZNEB). A total of fourteen stakeholders were interviewed (four female, ten male) from six stakeholder categories.
21. The evaluation was delayed because of the COVID-19 pandemic and conducted with travel restrictions still in place. Consequently, it has the following limitations: Limited access to stakeholders. Low response rate among survey respondents. Low confidence in the generalisation and/or extrapolation of results. Exclusion of marginalised groups. Limitations to data collection, in person engagement and physical verification of findings.

Key findings

22. **Strategic relevance:** The promotion of renewable energy and energy efficiency in buildings in Jamaica remains consistent with the strategic priorities of GEF, UNEP and Jamaica. The project scope and aspirations are also highly relevant to the Caribbean region. Relevance is reinforced by the significant number of complementary initiatives implemented alongside this project.
23. **Quality of project design:** While the project concept was sound, the project faced multiple design challenges. The design relied on two key building blocks: Demonstrating the benefits of clean energy technologies and solutions in buildings (new and retrofit). A core group of influential stakeholders, representing government, agencies of government, financial institutions, academia, building owners and developers, and building professionals, to be actively part of the project and its governance, to serve as ambassadors for the learnings from the project.
24. Weaknesses in the design related to (i) the sequential structure of components that depended on construction and renovations proceeding swiftly to inform building codes, policies and effective communication; (ii) the heavy reliance on a small group of stakeholders to steer the project and integrate learnings into their respective spheres of

influence without formal commitments; (iii) how it visualised co-financing; (iv) the articulation of the results framework (outputs, outcomes, impacts) and project logic; and, most significantly, (v) the documented project design. The project document contained multiple, significant inconsistencies between the description of components, budget, roles, governance structures, workplan, monitoring plan and costing. This disarray was especially detrimental to a project team with no prior experience of GEF-funded and/or UNEP implemented projects.

25. **Nature of external context.** Project implementation was impacted by a 66% devaluation of the Jamaican dollar during the implementation timeframe; multiple government staff changeovers including dismissal of the Minister of Energy who was an avid supporter of the project; halving of the price of oil since project inception which adversely impacted the motivation for improved energy use, and the global COVID-19 pandemic disrupting performance monitoring for ZNEB certification. Although individually, these adverse conditions would not be considered severe, the coincidence and sequencing of events contributed to significant and repeated disruptions throughout the implementation timeframe. Most significantly, it appeared to have eroded the initial political will and support for the project.
26. **Effectiveness** (attainment of project objectives and results): Most importantly, the project successfully delivered two prominent and high-quality demonstration facilities that showcases the energy efficiency and renewable energy technologies and solutions possible in new and existing buildings that are located in tropical and sub-tropical climates. It set out (i) to build the first ZNEB in a tropical environment and (ii) retrofitted the National Housing Trust (NHT) head quarter building, demonstrating the benefits to the primary organisation responsible for public housing in the country.
27. This is a unique and invaluable contribution to Jamaica and the Caribbean region that will be available for learning and demonstration purposes well into the future. Full operation of the buildings have however been delayed by the global COVID pandemic. As a consequence, measured performance data, as a key output from the project, remains pending.
28. Progress has also been made towards formulation and adoption of energy efficient building codes. Jamaica has revised its building codes to align with international codes, for the first-time incorporating requirements for EE and Conservation. During this time, the Caribbean also adopted a regional energy efficiency building code. This demonstrates a region-wide commitment towards improved energy use in buildings and establishes a platform for more energy aware building practices. Project delays meant that learnings and performance data from the demonstration facilities will only be available to inform future revisions and refinements of the codes.
29. The project has also made good grounds with developing a knowledge platform, with an invaluable collection of knowledge resources available to inform policy, planning and development decisions.
30. The extended implementation timeframe and delays meant that a number of planned interventions were taken up by parallel initiatives also pursuing more efficient and green building practices in the country. Such a multi-faceted, multi-stakeholder push for EE and RE contributes to greater reinforcement.
31. Stakeholder feedback suggested a growing interest in EE and RE practices, solutions and technologies in the design, development and renovation of buildings in Jamaica. the country has also embarked on a national retrofit programme for public buildings. Feedback also consistently reinforced the project design hypothesis that a physical demonstration facility with credible evidence of performance will encourage adoption at scale.

32. Despite not all outcomes (as described in the reconstructed TOC) being met in full, the project contribution at completion is well-placed to support the country in its sustainable energy building journey, provided it can be fully leveraged as a learning facility and performance data is effectively utilised to inform the future direction of roleplayers in the public and private sector.
33. **Sustainability:** Evaluation findings suggest adequate socio-political commitment, financial resources and institutional capacity is in place to ensure sustainability without further support.
34. **Financial Management:** Financial management of the project was sound, showing integrity and a high-level of compliance with all donor and UNEP requirements. The project did not fully utilise the available budget. Given the project's long-term ambitions, this money could have been utilised more effectively through responsive project steering and adaptive management. The project also had to overcome misunderstanding among partners regarding co-finance contributions and invested significant effort to overcome this hurdle.
35. **Efficiency:** The project execution was slow, facing numerous challenges with the delivery of the two demonstration projects. Delays were caused by project costing, approvals of plans by various authorities, procurement challenges, and importation challenges, among others. Delays with these components had a knock-on effect on later-scheduled components that relied on the learnings and data from the buildings as input (noted as a design weakness).
36. The NHT, who was not a co-financier, commitment to fund the retrofit project contributed enormously towards the efficient use of project resources.
37. The project did not effectively leverage the multiple national and regional projects that was implemented in parallel, missing the opportunity to exploit synergies to increase reach and influence.
38. The project governance structures were not implemented as designed. This undermined the important design premise that relied on the core stakeholder group to disseminate and advocate for the accelerated adoption of advanced EE and RE in buildings. It also meant that the project did not benefit from the intended governance, oversight and strategic direction. Consequently, the project did not successfully adapt to changes in the implementation environment or collaborate effectively with complementary initiatives to shape its contribution.
39. **Quality of Project Management and Supervision:** Despite challenges, the project benefitted from a committed and well-organised project team who actively collaborated with the UNEP Task Manager and FMO to ensure administrative compliance and delivery of key project milestones.
40. **Country ownership and driven-ness:** Government stakeholders did not support the project to the extent initially committed, or to the extent anticipated at planning stage. The absence of government representation on the project steering committee structure meant that the project missed out on the high profile government support and sponsorship. Such support would have been crucial to facilitate progress and securing the policy commitments (e.g. 100% building retrofits) the project sought to achieve.
41. **Responsiveness to Human Rights and Gender Equality:** The project was not subject to a gender analysis and marker scoring at design stage. Project formulation was not gender responsive and did not integrate gender mainstreaming, human rights, or social and environmental safeguards issues in the design. These were not standard requirements at design stage.

Conclusions

42. Based on the findings from this evaluation, the project demonstrates performance at the **Moderately Satisfactory** level (a table of ratings against all evaluation criteria is found in the Conclusions section, below).
43. The *LGGE Promoting Energy Efficiency and Renewable Energy in Buildings in Jamaica* project has made important inroads in raising the profile of energy efficiency and renewable energy in buildings in Jamaica. The successful completion of two demonstration facilities, showcasing a retrofit building and a ZNEB, made an invaluable and tangible contribution to Jamaica and Caribbean.
44. The project was severely hampered by the quality of the project design documentation. It also suffered from ambitious delivery timelines for two major construction projects, requiring numerous planning authorisations and demonstrating unfamiliar technologies and practices. Notably, the limited active engagement by government in the project, has
45. At this juncture, the reach and impact of the project beyond the two demonstration buildings is uncertain, but significant potential exist if performance data can be collected, analysed and effectively leveraged to influence decision-making and policy setting.
46. Stakeholder feedback consistently reinforced the project design hypothesis that a physical demonstration facility with credible evidence of performance will encourage adoption at scale.
47. The availability of credible evidence is a unique contribution from the project, intended to unlock uptake and investment at scale. Follow-through on performance monitoring, data collection, analysis, reporting and effective leveraging of this information will be critical. Failure to do so, presents the highest risk to accelerated adoption of more sustainable building practices and the country transitioning to ZNEBs.

Lessons Learned

48. Eight lessons were noted that may be useful for future projects of similar nature or faced with similar challenges. These are listed here and described comprehensively in Section VI, C in the report.
49. Lesson 1: An active and empowered PSC is critical to maximise project results and must be formally constituted and empowered
50. Lesson 2: Quality Assurance at design stage needs to check and recheck consistency across the complete set of documents
51. Lesson 3: A well-designed M&E plan is an important tool for successful implementation and can be supported with a simple “how-to-guide” and basic tools for low-cost M&E implementation
52. Lesson 4: Sequencing of project components requires careful consideration
53. Lesson 5: Project team induction or onboarding at project start and key staff change-overs is essential
54. Lesson 6: Financial Management offers an opportunity to monitor and flag significant underspending on budget
55. Lesson 7: Review stakeholder analysis at inception, firm up stakeholder commitments and make sure they understand their commitments

56. **Lesson 8:** Proactive utilisation of the time before finalising the PCA to improve project efficiency

Recommendations

57. Two recommendations are made. and the second relates to securing a commitment to collect and disseminate data

58. **Recommendation 1:** Integrate the Build Better Jamaica web platform with the university website. this recommendation targets the sustainability of the established knowledge platform. It is intended to secure the continued availability of the knowledge resources developed and collated by this project by incorporating it into an already established and maintained website such as the University or, alternatively, government.

59. **Recommendation 2:** Secure a commitment for data collection and dissemination from the two demonstration projects.

The project design was based on the supposition that proven and demonstrated performance evidence will be available to further the adoption of advanced EE and RE measures in buildings. The project impact thus hinges on the availability of compelling evidence of the benefits of EE, RE and ZNEB to advance large-scale adoption in the country and, potentially, the region.

It is therefore recommended that the current arrangements with the UWI and NHT are revisited, revived and/or firmed up to ensure proven and demonstrated performance data is available and communicated effectively to secure project impact and results.

60. Overall, the project receives a **Moderately Satisfactory (3.95)** rating in the terminal evaluation. The respective category project ratings are summarised below:

Criterion	Rating
Strategic Relevance	Highly Satisfactory
1. Alignment to UNEP MTS, POW and Strategic Priorities	Highly Satisfactory
2. Alignment to UNEP Donor/GEF/Partner strategic priorities	Highly Satisfactory
3. Relevance to global, regional, sub-regional and national environmental priorities	Highly Satisfactory
4. Complementarity with existing interventions/ Coherence	Moderately Satisfactory
Quality of Project Design	Moderately Satisfactory
Nature of External Context	Moderately Unfavourable
Effectiveness	Moderately Satisfactory
1. Availability of outputs	Moderately Satisfactory
2. Achievement of project outcomes	Moderately Satisfactory
3. Likelihood of impact	Moderately Likely
Financial Management	Satisfactory
1. Adherence to UNEP's financial policies and procedures	Satisfactory
2. Completeness of project financial information	Satisfactory
3. Communication between finance and project management staff	Satisfactory
Efficiency	Moderately Unsatisfactory
Monitoring and Reporting	Moderately Unsatisfactory
1. Monitoring design and budgeting	Highly Unsatisfactory
2. Monitoring of project implementation	Moderately Unsatisfactory

Criterion	Rating
3. Project reporting	Satisfactory
Sustainability	Moderately Likely
1. Socio-political sustainability	Moderately Likely
2. Financial sustainability	Likely
3. Institutional sustainability	Likely
Factors Affecting Performance	Moderately Satisfactory
1. Preparation and readiness	Moderately Unsatisfactory
2. Quality of project management and supervision	Moderately Satisfactory
2.1. IA	Moderately Satisfactory
2.2. EA	Moderately Satisfactory
3. Stakeholders' participation and cooperation	Moderately Satisfactory
4. Responsiveness to human rights and gender equality	Moderately Unsatisfactory
5. Environmental and social safeguards	N/A
6. Country ownership and driven-ness	Moderately Unsatisfactory
7. Communication and public awareness	Moderately Satisfactory
Overall Project Performance Rating	Moderately Satisfactory

I. INTRODUCTION

61. The “LGGE¹³ Promoting Energy Efficiency and Renewable Energy in Buildings in Jamaica” project was implemented by UNEP’s Climate Mitigation Unit, Energy & Climate Branch, Economy Division (i.e. the Implementing Agency). The project corresponded with the UNEP Medium-Term Strategy of 2014 – 2017¹⁴, described under the Climate Change Strategic Focus and contributed to the second Expected Accomplishment: “*Low emission growth, energy efficiency is improved, and the use of renewable energy is increased in partner countries to help reduce greenhouse gas emissions and other pollutants as part of their low emission development pathways.*”
62. The Institute for Sustainable Development (ISD) at University of the West Indies (UWI), Mona served as the Executing Agency, responsible for executing project activities, monitoring project progress, and managing project staff and funds.
63. A Project Steering Committee was established with representation from the Office of Disaster Preparedness and Emergency Management (ODPEM), Scientific Research Council (SRC), Jamaica Public Service Company Ltd. (JPS), Caribbean Academy of Sciences, Jamaica (CASJ), University of Technology (UTECH), Jamaica Institution of Engineers (JIE), Jamaican Institute of Architects (JIA), United Nations Environment Programme (UNEP), and University of the West Indies (UWI).
64. The project was designed as a national project to promote energy efficiency (EE) and renewable energy (RE) use in buildings in Jamaica. It set out to identify solutions, demonstrate feasibility, raise market expectations for new construction and increase demand for retrofit solutions incorporating EE and RE.
65. The stated objective of the project was to “demonstrate far higher standards of EE, RE and environmental sustainability are both possible and desirable in building practices and policies in tropical and sub-tropical regions”.
66. The solutions, technical tools, policy measures, regulatory frameworks and building standards developed by this project were expected to significantly increase the size of the market for EE and RE solutions in Jamaica. At design stage, the project had hoped to develop valuable resources with broader relevance to the Caribbean region, and possibly other tropical and sub-tropical regions of the world.
67. The project also targeted a strengthening of the policy framework, building on the policy intentions of the National Energy Policy, by promoting (i) far higher standards of energy efficiency, (ii) the increased use of renewable energy sources within the Caribbean built environment, and (iii) supporting the development and implementation of appropriate regulatory and technical tools.
68. The Global Environment Facility (GEF) is the main source of funding. It is a full-size GEF project, (GEF project ID: 4167), with a grant of USD 2,361,000. Grant funding was paired with in-kind co-financing commitments from project partners of USD 5,100,000. The total project budget was USD 7,461,000.
69. Approval for the project was received from the GEF CEO in a letter dated 9 November 2012, followed by approval by the UNEP Project Approval Group on 13 March 2013. The legal instrument between UNEP and UWI was signed in May 2013 and the first transfer of funds was made in the same month¹⁵.

¹³ Low Greenhouse Gas Emissions (not consistently used as part of the project title)

¹⁴ https://wedocs.unep.org/bitstream/handle/20.500.11822/7670/-UNEP_Medium_Term_Strategy_2014-2017-2015MTS_2014-2017.pdf;

¹⁵ Cash advance instruction sent to the bank on 21 May 2013

70. The project was initially planned to be implemented within 48 months (4 years), targeting 31 January 2017 for completion. Significant delays were experienced, most notably with construction of the demonstration projects. This necessitated two justified project extensions to complete the intended scope of implementation, with the actual completion date 31 March 2020.
71. The project did not conduct a mid-term review (MTR).
72. In accordance with the UNEP Evaluation Policy¹⁶ and the UNEP Programme Manual¹⁷, this Terminal Evaluation (TE) is undertaken at completion of the *LGGE Promoting Energy Efficiency and Renewable Energy in Buildings in Jamaica* project. This evaluation covers an assessment of (i) the project performance (in terms of relevance, effectiveness and efficiency), and (ii) outcomes and impacts (actual and potential) stemming from the project – including their sustainability.
73. The objectives of the evaluation are two-fold: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote operational improvement, learning and knowledge sharing through results and lessons learned among UNEP, UWI and ISD. The expectation is therefore that the evaluation will identify lessons of operational relevance for future project formulation and implementation.
74. The audience for the findings of the TE includes (but is not limited to): UNEP Evaluation Office; UNEP (the Implementing Agency) project team members and their respective units; The GEF; Institute of Sustainable Development at the University of the West Indies (Executing Agency); project staff and key stakeholders who participated in the Project Steering Committee (PSC).

¹⁶ <https://www.unenvironment.org/about-un-environment/evaluation-office/policies-and-strategies>

¹⁷ <https://wecollaborate.unep.org>

II. EVALUATION METHODS

75. The findings of the TE are largely based on (i) a desk review of key project documents at design and implementation stage, (ii) interviews with key stakeholders, (iii) a survey sent to members of the Jamaica Institute of Engineers and Jamaica Institute of Architects and (iv) a video documenting the physical construction of the Zero Net Energy Building (ZNEB).
76. **Desk Review (secondary data).** The consultant reviewed key project documents at design and implementation stage. These included general background documentation, documented studies, plans, reports, training material, budgets, publications as well as the project website and online tool(s). Where relevant, information from these sources were validated during key stakeholder interviews and checked against media releases shared by the project team as well as additional media reports identified by the Evaluator. Additional desktop research was also done to develop an understanding of the implementation context in the country and to confirm the strategic relevance of this project. A full list of the documentation that were reviewed, is presented in Annex III.
77. **Semi-structured interviews of stakeholders (primary data).** A framework of stakeholder categories earmarked for interviews had been prepared at the inception stage with a preliminary indication of names based on steering committee members and stakeholder lists. All stakeholder groups, listed in the Project Document as members of the project advisory and steering committee, were initially¹⁸ identified for interviews. The list was confined to a small number of organisations with diverse representation (Table 2). This approach was taken because of the project’s focused stakeholder engagement approach (discussed in Section III, C: Stakeholder). The list was shared with the project team to confirm and/or assist with the identification of suitable representatives. Because of the continued challenges related to the COVID pandemic, all interviews were conducted online, using Microsoft Teams.
78. Interview questions were structured according to the evaluation framework, with a discussion outline prepared for each interview. Eleven (11) interviews were completed with 14 stakeholders (4 female/10 male). An iterative approach was taken, meaning that evolving findings were considered and validated during subsequent interviews or additional data requests.
79. Six (6) stakeholders did not respond to multiple requests for an interview, and two were not available for an interview during February and March 2022. This included the GEF Focal point. A complete list of people interviewed is attached as Annex II. The following stakeholder groups were included:

Table 2. Stakeholder composition for interviews

Stakeholder category	No. of stakeholders interviewed	Comment
National government (including ministries, governmental departments, agencies, institutions, and state-owned enterprises)	1	Representative from the Bureau of Standards (BoS). The BoS was represented on the Project Steering Committee (PSC). No government officials participated in the interviews. The GEF Operational Focal Point, within the Ministry of Environment, was contacted on multiple occasions.

¹⁸ Not all stakeholders who were identified at design stage as members of the project governance structures, did participate. The list were therefore reduced at the start of the evaluation to correspond with actual membership.

Stakeholder category	No. of stakeholders interviewed	Comment
Power utility(ies)	1	Representative from the Jamaica Public Service Company Ltd (JPSCo) ¹⁹ . JPSCo was represented on the PSC.
Project steering / advisory committee	-	Counted / reflected under other stakeholder categories.
Building professionals / Industry associations (Architects, engineers, property developers and contractors)	3	Interviews were conducted with chairpersons (past and present) from the two institutes. Both the JIA and JIE were represented on the PSC. A survey was also circulated among members of the two institutes with 13 completed responses received.
Academia (universities and research centres)	3	Two representatives from the University of the West Indies (UWI) as recipients of the ZNEB; A representative from the Institute of Sustainable Energy, University of Technology, Jamaica (UTech) and member of the PSC.
Financial institutions	0	No representative was identified for inclusion in the interviews.
Jamaica Hotel and Tourist Association	0	No representative identified for inclusion in the interviews.
Jamaica Green Building Council	0	This organisation is dormant. No representative identified for inclusion in the interviews.
Implementing agency	4	Task Manager; Climate Change Unit, Mitigation Branch representative; Fund Management Officers; and UNEP Head of the Caribbean Sub-regional Office
Executing agency	2	Supervisor and Project Manager
Total	14	

80. **Questionnaires / surveys (primary data)**. A short survey or questionnaire was circulated to members²⁰ of the JIA and JIE using Google Forms. The aim was to obtain feedback from a broader group of project beneficiaries that could test the project reach beyond the PSC/PAC, the extent to which targeted outcomes are being realised and gauge the longer-term impact. Survey questions were mainly quantitative in nature to keep responses simple and enable aggregation of data. The gender of all respondents was captured to assess representation among participants. Only 13 responses were received despite several reminders sent to the respective institutes. Still, these provide some indication of current and future practices. While limited, it presents the best available view of interest and adoption of EE and RE in buildings among building professionals.

81. Of the 13 participants in the survey, 7 were female and 6 male, 7 engineers, 5 architects and 1 other. It was understood that all participants are located in Jamaica as members of national institutes. Four participants opted to provide their names. No other identifying data were requested.

82. **A summary of survey results is included as an annex to the report (Annex VI).**

83. Particular emphasis was placed on triangulation (cross-validation) of data sources (monitoring data, interview results, surveys, etc.) and an assessment of plausibility of the

¹⁹ The JPSCo is 19.9% owned by the Jamaican government, the remainder of the shares are held by private entities.

²⁰ Institute secretariats had reportedly circulated the request to all members. Membership of the JIA is currently listed as 107 architects, 100 practices and 574 students (<https://www.comarchitect.org/jamaica/>). Membership for the JIE was reported as 459 in the 2017 /18 Annual report (most recent available on the website) and on the website, 498 entries for members in good standing (<https://www.jiejamaica.org/>). Membership of the JIE is also differentiated between corporate, affiliate and graduate categories.

results obtained. To validate observations, findings, and areas of recommendation, the Evaluator also reviewed government and other research publications, related news articles and documentation of related initiatives.

84. The only challenge with data collection related to stakeholder interviews, accessing contact details, and delays with introductions to stakeholders. Initial engagement of stakeholders was delayed because of timing (coinciding with December holidays) and then prolonged with both active project team members falling ill with COVID. Stakeholder availability further delayed the data collection process and evaluation.
85. Information sharing from the project was quick and very comprehensive. Documents and reports were well organised. Additional data requests, arising from the desktop review, data collection and interview phases, were responded to promptly.
86. The evaluation has been complicated by:
- **Availability of the project team.** It was anticipated that the schedule for interviews would be finalised in consultation with the project team. COVID-19 adversely impacted the availability of project team members to assist with contact information and facilitate introductions to stakeholders.
 - **Stakeholder availability.** Travel limitations imposed because of COVID-19, also complicated the scheduling of interviews. Online interviews had to be scheduled with consideration of the different time zones (7-hour time difference between Jamaica and South Africa, where the Evaluator is based). It was originally anticipated that interviews would be confined to four hours per day to accommodate time differences. To accommodate availability challenges, this window was stretched with timeslots offered over an 8-hour window (07:00–15:00 Jamaica time; 14:00–22:00 SAST).
 - Even with interviews scheduled on Microsoft Teams, stakeholders were slow to respond and had limited availability. Accordingly, the first interview could only be secured for 19 January 2022 and the last interview was concluded on 23 February 2022. A supplemental interview was held on 22 March 2022, after the preliminary feedback of results presentation on 11 March 2022. This is considerably later than the timeframe initially planned for interviews from 4 to 14 January 2022. Despite this extended data collection timeframe, some stakeholders were still not available to be interviewed over this period. Notably, the GEF focal point indicated availability only after mid-April 2022.
87. With consideration of the challenges and complications noted above, the evaluation had the following limitations:
- **Limited access to stakeholders.** The project had a confined list of stakeholders (12, not including the EA and IA) for whom contact details were available. Of these, six did not participate. Interview responses were generally consistent, but limited in number and scope. No contact details for government officials, attendees of events and workshops or other development partners were available.
 - **Low response rates among survey respondents.** The survey targeted broader engagement, outside the direct project stakeholders, aiming to identify potentially divergent and unbiased views. While the survey responses were roughly equal from the JIA and JIE and from men and women, the percentage response rate was exceptionally low (approximately 5% for the JIA and 1.5% for the JIE).
 - **Generalisation / Extrapolation of results.** A small group of direct project stakeholders and small number of voluntary survey respondents are not necessarily representative of the general population and would suggest responses that are

somewhat biased towards the project. This was addressed, as best possible, by broad desktop research to supplement the primary data.

- **Inclusion of marginalised groups.** The project scope did not directly engage or impact marginalised groups. Other than the effort made to engage female build professionals and project stakeholders, the evaluation did not include strategies used to reach and include the views and feedback of marginalised or potentially disadvantaged groups.
- **Effects of the COVID-19 pandemic on data collection.** The global pandemic severely restricted data collection. Travel restrictions prevented an in-country visit and in person meetings. The availability of stakeholders was also impacted due to colleagues falling ill to the virus.

88. Although gender was not included explicitly at the time of project design, the evaluation hoped to assess any positive and/or negative impacts resulting from the project on women and people with disabilities. Stakeholders were asked for their perspective on this question during interviews. The evaluation also captured the gender of participants in interviews and the survey, to superficially assess if any common gender-differentiated response is evident.
89. Throughout this evaluation process, and in the compilation of the Final Evaluation Report, the identities of both interviewees and survey respondents were kept confidential, although the small number of participating stakeholders means that the origin of certain inputs would not be fully protected. Feedback was not generally sensitive in nature and where it was a concern, it was not attributed to an organisation. Data were collected with respect for ethics and human rights issues. All information was gathered after prior informed consent from people, all discussions remained anonymous, and all information was collected according to the UN Standards of Conduct.
90. The Evaluation Framework used to guide interviews and data collection at evaluation, is included as Annex IV to this report. The Evaluation Framework follow the prescribed evaluation criteria to assess project performance in terms of relevance, effectiveness and efficiency. the set of Evaluation Criteria are grouped in nine categories²¹: (A) Strategic Relevance; (B) Quality of Project Design; (C) Nature of External Context; (D) Effectiveness, which comprises assessments of the availability of outputs, achievement of outcomes and likelihood of impact; (E) Financial Management; (F) Efficiency; (G) Monitoring and Reporting; (H) Sustainability; and (I) Factors Affecting Project Performance.
91. All nine categories were rated on a six-point scale. Most criteria are rated in terms of performance as Highly Satisfactory (HS); Satisfactory (S); Moderately Satisfactory (MS); Moderately Unsatisfactory (MU); Unsatisfactory (U); Highly Unsatisfactory (HU).
92. *Sustainability* and *Likelihood of Impact* are rated from Highly Likely (HL) down to Highly Unlikely (HU) and *Nature of External Context* is rated from Highly Favourable (HF) to Highly Unfavourable (HU).
93. Category ratings were weighted and aggregated for the determination of an overall project score. For this purpose, a weighted ratings table, available in Excel²², was used that calculates the aggregations, including those where criteria have sub-categories, and gives the overall performance rating for the project.

²¹ Guidance documentation and tools shared by the Evaluation Office: 01_Evaluation_Criteria.docx, 02_Criterion_rating_descriptions_matrix.docx and 03_Evaluation_Project Performance Ratings_Table_ONLY.docx

²² Guidance documentation shared by the Evaluation Office: 04_Weighed Ratings Table.xlsx

III. THE PROJECT

A. Context

94. Jamaica, an independent island state located in the Caribbean, is heavily dependent on imported fossil fuels, with petroleum imports the primary source of energy for electricity production. Petroleum accounts for approximately 90% of total energy consumption, making the country vulnerable to price volatility, and rising fuel prices (Figure 1).
95. This high reliance on fossil fuels for electricity generation also contributes to a high grid emissions factor²³ (0.705 tCO₂/MWh)²⁴.

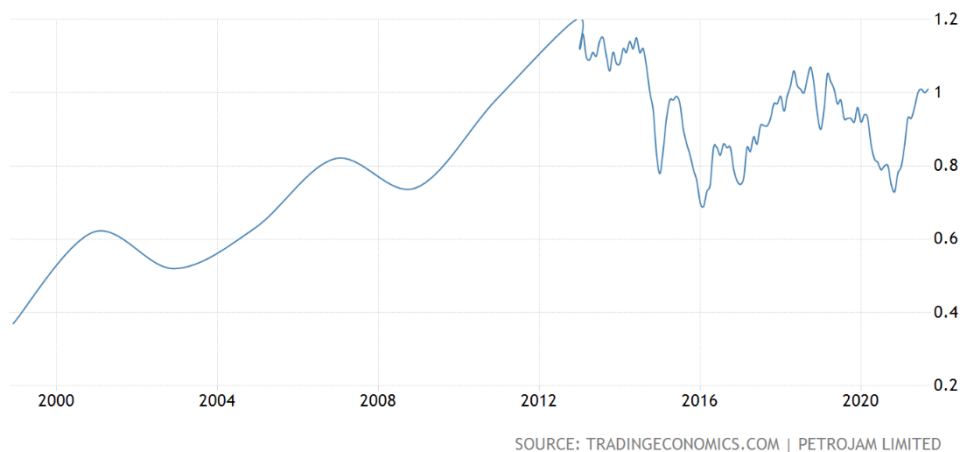


Figure 1: Fuel price trend in USD/Litre, Jamaica (25 Years)²⁵

96. The energy supply sector has faced numerous challenges of policy and institutional coordination and coherence, resulting in high levels of inefficiency and high electricity costs and tariffs.
97. Despite high prices, electricity is also consumed inefficiently, making Jamaica's energy use per capita high compared to other developing nations. World Bank data²⁶ for 2011 shows per capita electricity consumption in Jamaica as 1,216 kWh per person. This is below the world average of 3,023 kWh per capita in 2011. World Bank data only have corresponding values for Suriname and Trinidad and Tobago under Caribbean small states, making a regional comparison invalid. It is however more than double the average for Sub-Saharan Africa (508 kWh/capita), South Asia (570 kWh/capita) and 60% higher than the average for Eastern and Southern Africa (740 kWh/capita) in 2011.
98. In terms of energy intensity, the country has consistently ranked among the top third in the world²⁷. Jamaica is far more energy intensive than the average for Latin America and the Caribbean and has generally exceeded the world average over the preceding two decades²⁸. The project document noted at the time of project design that Jamaica consumed 21,152 British Thermal Units (BTU) to produce USD 1 of output compared to a

²³ Grid Emission Factor refers to CO₂ emission factor (tCO₂/MWh) which will be associated with each unit of electricity provided by an electricity system.

²⁴ Jamaica's grid EF as published by the UNFCCC available at: https://cdm.unfccc.int/methodologies/standard_base/2015/sb141.html

²⁵ Sourced from <https://tradingeconomics.com/jamaica/gasoline-prices>

²⁶ World Development Indicators. Last updated 2021/10/28. Available at https://data.worldbank.org/indicator/EG.USE.ELEC.KH.PC?end=2014&most_recent_value_desc=false&start=1971&view=map

²⁷ <https://www.indexmundi.com/facts/indicators/EG.EGY.PRIM.PP.KD/rankings>

²⁸ <https://www.iea.org/reports/sdg7-data-and-projections/energy-intensity>

global average of 4,600 BTU²⁹. World Bank³⁰ data shows energy intensity for Jamaica in 2011 at 5.21 MJ/\$2011 PPP GDP. This is just below the world average reported by the World Bank of 5.93 MJ per USD (2011).

99. Buildings globally represent a large consumer of energy, resulting in significant carbon dioxide (CO₂) emissions generated from the burning of carbon fuels to supply these energy needs. With a shift to greater energy efficiency and renewable energy in buildings, the associated energy-related Greenhouse Gas (GHG) emissions will be reduced. The benefits of more sustainable energy use in buildings, however, do not only lie in climate change mitigation. Greater efficiency and more sustainable energy use also contribute to cost savings, improved economic productivity, and is believed to contribute to job creation and social development.
100. In Jamaica, electricity consumption in buildings presents a significant share (Project Document, paragraph 62 states this as 55%)³¹ of the electricity use in the country. This is largely ascribed to the input energy required to achieve acceptable comfort levels, i.e. adequately cool and dry conditions, in a hot, humid climate such as Jamaica's. Consequently, the levels of energy efficiency in most of the buildings throughout the Caribbean region are exceptionally low, with very high cooling loads. In 2004, building related emissions were estimated at 8.6 billion tons and expected to almost double by 2030 without intervention.
101. Though tropical and sub-tropical climates present technical challenges, the building sector in such regions has considerable potential for positive change – to become far more efficient in terms of resource use, less environmentally intensive, and less costly – with the introduction of suitable innovations and design solutions.
102. Over the years, many initiatives have targeted better energy use in Jamaica, including improved diversification of supply, increased share of renewable energy and improved energy efficiency. The National Energy Policy (2009 – 2030) addresses both supply and demand energy issues, highlighting seven key areas that includes (i) security of supply through diversification and increased renewable energy, (ii) modernisation of the energy infrastructure, (iii) development of renewable energy sources, (iv) energy conservation, and (v) eco-efficiency in industries³². With this policy, the Government established a goal of 20% of renewable energy in the energy mix by 2030. On October 16, 2018, Jamaica's then Prime Minister, Andrew Holness, directed the government to increase the target to 50%.
103. Past efforts to promote efficient use of energy have been mostly ineffective, failing to translate into sustainable change. To realise these targets, the policy framework needed to be expanded and strengthened to comprehensively encourage and reward life-cycle approaches to energy-efficiency in the building sector, thereby achieving systemic transformation of the built environment.
104. At the time of project design, suitable technologies and solutions were already available to cut energy consumption in both new and old buildings by 30 to 50% without significantly increasing investment costs. Smart design practices, improved insulation, low energy appliances, high efficiency ventilation and heating/cooling systems, as well

²⁹ This was confirmed against the final ECE Policy: Ministry of Energy and Mining. "National Energy Conservation and Efficiency Policy 2010-2030." (2010) where it is captured as 20,000 BTU. https://digitalrepository.unm.edu/la_energy_policies/38

³⁰ https://data.worldbank.org/indicator/EG.EGY.PRIM.PP.KD?end=2015&locations=JM-1W&most_recent_value_desc=false&start=2000

³¹ No source provided in the ProDoc for this number.

³² The remaining two focus areas relate to: Development of a comprehensive governance/regulatory framework; and Enabling government ministries, departments and agencies to be model/leader for the rest of society in terms of energy management

as the behaviour of building users, were identified as typical interventions that could all be market-driven and contribute significantly to energy savings.

105. Accordingly, the project titled "*Promoting Energy Efficiency and Renewable Energy in Buildings in Jamaica*" was conceived by the Institute of Sustainable Development (ISD) at the University of the West Indies (UWI), with the financial support of the Global Environmental Facility (GEF) and the technical assistance of the United Nations Environment Programme (UNEP), to identify solutions, demonstrate feasibility, raise market expectations for new construction and increase demand for retrofit solutions.
106. The solutions, technical tools, policy measures, regulatory frameworks and building standards that would be developed by this project were expected to significantly increase the size of the market for energy efficiency and renewable energy technologies in Jamaica, across the Caribbean region, and in other tropical and sub-tropical regions of the world.
107. The project also targeted a strengthening of the policy framework, building on the policy intentions of the National Energy Policy, by promoting (i) far higher standards of energy efficiency, (ii) the increased use of renewable energy sources within the Caribbean built environment, and (iii) supporting the development and implementation of appropriate regulatory and technical tools.

B. Results Framework

108. The project objectives, as captured in the results framework, was to increase EE and the use of RE in the building sector in Jamaica thus reducing energy consumption and greenhouse gas (GHG) emissions. Targeted sectors included residential, commercial and public (institutional) buildings. The project estimated that sustainable energy solutions in buildings would lead to a GHG emission reduction of more than 4.2 million tons of CO₂ equivalent (CO₂e) from the building sector by 2035.
109. Towards this objective, the project focused on demonstrating suitable solutions in both new and retrofit buildings to showcase benefits and inform policy, decision-making and planning by policymakers and building professionals. This scope was implemented across five project components:
- (i) **Component 1: Technical design.** This component focused on identifying suitable design data, technologies and solutions for tropical and sub-tropical climates that could be used to inform (i) the design of the demonstration buildings as well as (ii) policy direction, including building codes and a national building retrofit policy.
 - (ii) **Component 2: Retrofit solutions.** This component targeted existing buildings, intending to demonstrate advanced retrofit solutions to policymakers, government officials, owners of buildings and houses, architects, and construction companies thus showcasing the technical feasibility and the environmental and economic benefits of retrofitting existing buildings.
 - (iii) **Component 3: Zero-net energy demonstration building.** This component presented the core focus of the project. It set out to construct the first zero-net energy building (ZNEG) in a tropical climate, to demonstrate to policymakers, government officials, homeowners and buyers, architects, and construction companies the feasibility and environmental benefits of a net-zero energy building. By embedding this building within an academic institution, it would establish a continuous learning process inspiring the next generation of building professionals to develop more energy conscious buildings.
 - (iv) **Component 4: Policy and regulatory framework.** This component focused intended to use the learnings from the first three components to influence the

policy and regulatory framework in the country. It targeted (i) the inclusion of energy efficiency into the building codes, (ii) development of a national policy and plan to retrofit all suitable buildings in the country, and (iii) strengthening official testing facilities for EE technologies.

- (v) **Component 5: Dissemination.** This project component intended to establish a knowledge platform and network to disseminate learnings from the project and facilitate collaboration and knowledge sharing among different stakeholders within the country as well as other areas with similar climatic conditions.

110. To gauge the contribution of these components, a results framework was defined stating (i) the indicators to be used to track progress, (ii) the baseline against which the indicators would be measured, and (iii) the target to be achieved by the end of the project. The project results framework is presented in Table 3, below.

111. The quality of the results framework and the accompanying Monitoring and Evaluation (M&E) plan are discussed in *Section G: Monitoring and Reporting*.

112. The project logic is presented in a reconstructed theory of change at evaluation in *Section IV: Theory of Change at Evaluation*.

Table 3. Results framework as presented in the Project Document (Appendix 4: Results framework)³³

Project objective and outcomes	Description of indicator	Baseline level	End-of-project target ³⁴
<p>Objective. Increase energy efficiency (EE) and the use of renewable energy (RE) in the building sector in Jamaica thus reducing energy consumption and greenhouse gas (GHG) emissions</p>	<ul style="list-style-type: none"> • Tons of CO₂ emissions reduced in the buildings sector • Electricity consumption reduced in the buildings sector • Greater energy efficiency; lower ration of energy input to economic output (BTU per unit GDP) 	<ul style="list-style-type: none"> • Jamaica is dependent on imported oil for over 90% of total energy demand; 87% of all f/x income required in 2009 to buy oil • Jamaica is highly energy-inefficient; takes 21,152 BTU to produce US\$1.00 of output, compared to a global average of 4,600 BTU • Increasing GHG emissions due largely to highly inefficient built environment (buildings, city design, transport) • Architects, developers have little commitment to RE and EE 	<ul style="list-style-type: none"> • Direct and indirect emission reductions of 4,254,949 tons of CO₂ from the building sector by 2035 • Electricity savings of 6,219,100 MWh from the buildings sector by 2035. • About 617,216 houses retrofitted by 2035 • About 25,421 net-zero energy houses built by 2035 • A zero-carbon footprint in building construction by 2040

³³ Outputs were excluded from this view of the Results Framework

³⁴ No mid-term target was defined for the project

Project objective and outcomes	Description of indicator	Baseline level	End-of-project target ³⁴
<p>Outcome 1 Energy audit to model consumption in existing building types and integrated plan for construction of a demonstration prototype net-zero emission building to establish proof of concept in the sub-tropics, and test and develop building practices, standards and codes.</p>	<ul style="list-style-type: none"> • Plan for conducting energy audits of existing buildings • Plan for the preparation of an integrated plan for construction of a demonstration prototype net-zero emission building 	<ul style="list-style-type: none"> • Insufficient number of energy audits for modelling • Lack of building concepts for use of EE and RE technologies in tropical and sub-tropical conditions 	<ul style="list-style-type: none"> • General design of an energy efficient building with increased use of RE made and agreed by stakeholders
<p>Outcome 2.1 Advanced retrofit solutions to demonstrate to concerned agencies and stakeholders the economic and environmental benefits of retro-fitting in terms of applying energy efficiency (EE) and renewable (RE) technologies in existing buildings.</p>	<ul style="list-style-type: none"> • Number of training/demonstration events organized and level of participation • Number of architect firms and construction companies using advanced building solutions for retrofitting 	<p>Lack of suitable integrated design parameters and solutions for reducing GHG emissions through the use of EE and RE technologies</p>	<p>Availability and wide-spread use of advanced retrofit solutions to increase EE and the use of RE in existing buildings</p>
<p>Outcome 2.2 Demonstration to policymakers, government officials, owners of buildings and houses, architects, and construction companies of the technical feasibility and the environmental and economic benefits of retrofitting existing buildings</p>	<ul style="list-style-type: none"> • Development of a retrofitted building demonstration site • Number of participants in training/ demonstration events at retrofitted demonstration building 	<ul style="list-style-type: none"> • Policymakers, government officials, owners of buildings and houses, architects, and construction companies are unaware of advanced retrofitting solutions and their environmental and economic benefits 	<ul style="list-style-type: none"> • Increased awareness of policymakers, government officials, owners of buildings and houses, architects, and construction companies of the benefits of retrofitting
<p>Outcome 2.3 Sustainable retro-fitting operations including the availability of affordable financing</p>	<ul style="list-style-type: none"> • Number of on-going retro-fitting activities • Financing provided for retro-fitting activities 	<ul style="list-style-type: none"> • Retrofit activities are minimal and lack adequate financial support 	<ul style="list-style-type: none"> • Robust ongoing retrofitting activities • Adequate availability of financial support

Project objective and outcomes	Description of indicator	Baseline level	End-of-project target ³⁴
<p>Outcome 3.1 Net-zero energy demonstration building including assembled building components and modules that show policymakers, government officials, homeowners and buyers, architects, and construction companies the feasibility and environmental benefits of a net-zero energy building</p>	<p>Plan for completion and operation of advanced prototype demonstration building, including advanced sub-systems solution</p>	<p>Low level of awareness of the technical feasibility and environmental benefits of a zero-net energy building</p>	<ul style="list-style-type: none"> • Operational net-zero energy demonstration building • Increased awareness among policy-makers, government officials, home owners and buyers, architects, and construction companies, and other relevant experts in Jamaica and the region of the advanced new options and optimal building technologies for (sub)tropical climate
<p>Outcome 3.2 Efficient operation and maintenance of the net-zero energy demonstration building and establishment of permanent learning process to develop more advanced EE and RE applications and increase EE and the use of RE in buildings in the future</p>	<p>Plan for development of (i) instructions and guidelines for operation and maintenance of net-zero energy buildings and (ii) learning process for development of more advanced EE and RE applications</p>	<p>Such instructions, guidelines, and learning process do not exist</p>	<p>Detailed instructions and guidelines and proposed learning process available by the third year</p>
<p>Outcome 3.3 Increased investments in more energy efficient lighting, heating, and cooling solutions in new buildings and sustainable market transformation to net-zero energy buildings</p>	<ul style="list-style-type: none"> • Number of EE and RE solutions used in new buildings • Increasing number of net-zero energy buildings as new public or private sector buildings under construction 	<p>Low level of awareness among policymakers, government officials, developers of housing projects, architects, financial institutions, construction companies, and the general public of the economic benefits of EE and a net-zero energy building</p>	<ul style="list-style-type: none"> • Increased awareness of the economic benefits of EE in buildings and a net-zero energy building • New EE and RE solutions used in 10% of new buildings by the fourth year
<p>Outcome 4.1 National policy and plan for retrofitting all suitable existing buildings and comprehensive policy and regulatory framework for development of net-zero energy buildings</p>	<p>Roadmap for preparation of (i) policy and plan for retro-fitting and (ii) comprehensive policy and regulatory framework for development of net-zero energy buildings</p>	<p>Policy and plan for retrofitting all suitable existing buildings and comprehensive policy and regulatory framework for development of net-zero energy building do not exist</p>	<p>Proposed policy and plan for retrofitting all suitable existing buildings and comprehensive policy and regulatory framework for development of net-zero energy building is prepared by third year and adopted by the end of the Project</p>

Project objective and outcomes	Description of indicator	Baseline level	End-of-project target ³⁴
<p>Outcome 4.2 Designation of regional or extra-regional testing facility to promote enforcement of EE standards for buildings in the region</p>	Roadmap for establishing regional or extra-regional testing facility	<ul style="list-style-type: none"> Regional or extra-regional testing facility does not exist Poor enforcement of standards for EE and use of RE for buildings in the region 	<ul style="list-style-type: none"> Regional or extra-regional testing facility established by the end of the Project Improved enforcement of standards for EE and use of RE for buildings in the region
<p>Outcome 5 Environmental and economic benefits of the Project are widely understood in Jamaica and other areas with similar climatic conditions</p>	<ul style="list-style-type: none"> Number of media articles and workshops Number of enquiries received with regard to the retrofitting and prototype zero net energy building, including feed-back received from experts in the region and relevant regional and global projects Frequency of coverage by the selected national media on the topic Visits to Project web site 	<ul style="list-style-type: none"> Minimum available information about the technical feasibility and the environmental and economic benefits of increasing EE and the use of RE in buildings through retrofitting existing buildings and the construction of zero-net energy buildings Lack of practical proof of the feasibility of EE and RE solutions 	<ul style="list-style-type: none"> Increased awareness of the zero net energy building and the learning opportunities that it offers for other countries in the region and those with similar climatic conditions A minimum of ten publications a year after 2015; a minimum of 250 visits to the project web site a year after its establishment.

C. Stakeholders

113. At design stage, the stakeholder analysis had been documented with key stakeholders in the project considered in five categories: (i) Government ministries and agencies, (ii) financial and (iii) academic institutions, (iv) professional bodies for both architects and engineers and the (v) private sector.
114. At design, the stakeholder analysis took a very targeted approach, focusing on those stakeholders with a direct role to play in informing and facilitating the project design and implementation and/or disseminating and adopting the learnings into practices. For example, architects in general were not identified as a stakeholder, but rather the Jamaica Institute of Architects as representative body and member of a Project Advisory Committee (PAC) (see Section D, below).
115. This focus seemed appropriate as the project is pitched as “high-impact, policy-orientated”, targeting role players who can facilitate the mainstreaming of learnings into policy, practices, standards and codes and/or serve as key interface on behalf of a group of stakeholders.
116. The project had also very deliberately and strategically included key stakeholders as participants in the governance structure on the PAC, leveraging existing interest, experience and networks of various role players to contribute to project development and implementation and ensure dissemination and integration of findings and learnings into different spheres, sectors and the broader region.

117. If effectively implemented and operational, this approach to stakeholder engagement would have allowed for very targeted and cost-effective communication. This did not materialise as planned, as discussed and presented in Table 5, below.
118. No direct reference was made in the project document to civil society, gender, people with disabilities or vulnerable groups as stakeholders to the project³⁵. Civil society is indirectly considered as a beneficiary through (i) inclusion of the Ministry of Transport, Works and Housing (MTWH)³⁶ as a key stakeholder and (ii) the stated linkage of the project to the Vision 2030³⁷ Jamaica i.e. the country's National Development Plan and the associated National Housing Policy.
119. At the start of the evaluation, the original stakeholder analysis was translated into a stakeholder map (Johari window), identifying stakeholders based on assumed interest and influence in relation to the project objectives. Many of those who had been identified as priority stakeholders (high influence and interest) did not participate in the project, as anticipated.
120. As discussed in *Section V. C: Nature of the External Context*, the project lost the initial, government support that had been pledged. The direct participation by the Minister of Housing, identified at design stage as project sponsor, did not materialise. Stakeholders who were thought to have a high level of interest in the project, did not participate.³⁸
121. The project offered direct and indirect benefits to the numerous stakeholders. A selection (not an exhaustive list) is illustrated in Table 4, below:

Table 4. Project beneficiaries

Stakeholder	Direct/Indirect	Benefits derived
University of West Indies	Direct	Beneficiary of the ZNEB
National Housing Trust	Direct	Beneficiary of the NHT headquarter retrofit building, with more than 40% savings in energy consumption.
Government policy- and decision-makers including agencies of government	Direct	Access to credible data to inform policy setting, decision-making and planning. Support for building practices to advance towards national energy savings and emission reduction goals.
Building professionals	Direct	Access to credible knowledge and data to inform building practices and client services. Access to a demonstration facility showcasing various EE and RE technologies and benefits.
Students (all levels of education)	Indirect	The ZNEB facility will be utilised as an advanced learning facility / Science academy and demonstration facility for sustainable building best practices, short courses related to sustainability as well as introduction to science and physics.
Jamaican public	Indirect	The broader public will, and may already, benefit from reduced climate impacts associated with green buildings, cost savings and economic benefits of resource efficiency, and improved thermal comfort of green building practices.

³⁵ This was not a GEF or UNEP requirement at the time of project design.

³⁶ The Ministry of Transport, Works and Housing (MTWH) was identified as a stakeholder because of the interest and influence they have with respect to the facilitation, development and implementation of access to legal, adequate and affordable housing solutions for the Jamaican people. With respect to housing, the MTWH's responsibilities included the development of housing policy and community development (social services). Their inclusion suggested as an indirect link to civil society as potential beneficiaries of the project.

³⁷ The Vision 2030 Jamaica is a 21-year plan that articulates a vision to make "Jamaica the place of choice, to live, work, raise families, and do business." It is centred on making the Jamaican people the centre of transformation, with one of the goals of the Energy Sector Plan to "...improve the quality of life for citizens."

³⁸ Most notable among these were the Ministry for Water, Land, Environment, and Climate Change (MWLECC) and Ministry of Transport, Works, and Housing (MTWH).

122. During implementation, the project appears to have focused on the following stakeholders:

Table 5. Stakeholder engagement

Stakeholder category	Organisation	Engagement approach
Government ministries	Ministry of Science, Energy and Technology (MSET)*; Ministry of Local Government and Community Development (Parish Council)	<ul style="list-style-type: none"> Attendance of various events and presentations. Attendance of and keynote speakers at the launch milestones (e.g. ground breaking and commissioning of the ZNEB). Recipient of the National Retrofit Policy and Plan*. <p>It was noted during interviews that the high-level government attendance at project events were remarkable for Jamaica.</p>
Government agencies or state-owned enterprises	National Housing Trust***, Jamaica Bureau of Standards, Office of Disaster Preparedness and Emergency Management (ODPEM)** Scientific Research Council (SRC)**	<ul style="list-style-type: none"> Participation in the PSC. Participants and presenters at various workshops and training events. Implementation partner for retrofit building
Power utility(ies)	Jamaica Public Service Company Ltd. (JPSCo)**,	<ul style="list-style-type: none"> Participation in the PSC. Participant and presenter at various workshops and training events.
Financial institutions	None	No evidence found of substantive engagement with financial institutions.
Academic institutions	UWI**, The Institute of Sustainable Energy, University of Technology, Jamaica (UTech)**; Caribbean Academy of Sciences, Jamaica (CASJ)**	<ul style="list-style-type: none"> Participation in the PSC. Participants and presenters at various workshops and training events. Student site visits to the demonstration facilities. Input into government policy developments and publications.
Professional bodies for both architects and engineers	Jamaica Institute of Engineers (JIE)** and Jamaica Institute of Architects (JIA)**	<ul style="list-style-type: none"> Participation in the PSC. Participants in the Building Code Work Group.
Private sector	None	<p>The project had initially anticipated participation in the PAC by the Jamaica Hotel and Tourist Association (JHTA); Incorporated Masterbuilders' Association of Jamaica (IMAJ); Centre of Excellence for Renewable Energy (CERE); Jamaica Green Building Council (JGBC); and the Private Sector Organization of Jamaica.</p> <p>None of these listed entities participated. No evidence was found that these stakeholders were engaged in any other way.</p> <p>Suppliers of EE and RE products presented solutions and technologies at workshops hosted by the project.</p>

Note: In the table * indicates the Ministry that received the National Retrofit Policy, ** indicates the members of the PSC, and *** identifies the implementation partner for the retrofit building.

D. Project implementation structure and partners

123. The *LGGE Promoting Energy Efficiency and Renewable Energy in Buildings in Jamaica* project was implemented by UNEP's Climate Mitigation Unit, Energy & Climate Branch, Economy Division.
124. The Institute of Sustainable Development (ISD) at the University of the West Indies (UWI) served as the Executing Agency. It was the main partner of UNEP and directly responsible for managing and executing the project.
125. ISD established a Project Management Unit (PMU) to execute project activities, monitor project progress, and manage consultants, project resources and disbursement of funds. The PMU consisted of two Principal Research Directors in a management capacity, a full time Project Coordinator / Manager (PM), and a Project Administrator.
126. A Project Steering Committee (PSC)³⁹ was established with representation from:
- Office of Disaster Preparedness and Emergency Management (ODPEM)
 - Scientific Research Council (SRC)
 - Jamaica Public Service Company Ltd. (JPS)
 - Caribbean Academy of Sciences, Jamaica (CASJ)
 - University of Technology (UTECH)
 - Jamaica Institution of Engineers (JIE)
 - Jamaican Institute of Architects (JIA)
 - United Nations Environment Programme (UNEP)
 - University of the West Indies (UWI)
 - In 2019, the National Housing Trust (NHT) participated in the PSC as a key stakeholder and direct beneficiary of the retrofit demonstration project.
127. The role of the PSC was not described in the original Project Document. The PSC was shown in the visual depiction⁴⁰ of the governance or implementation structure, and it was referenced under monitoring and evaluation⁴¹ activities where it states: "Progress with regard to the delivery of the expected global environmental benefits will be assessed by the Steering Committee at agreed intervals". The PSC is also listed as a responsible party to approve regular / standard reporting. The Project Advisory Committee (PAC) role, as described in the project Document and captured below (paragraph 129), overlapped largely with the typical functions of a PSC.
128. The project organisational structure and implementation arrangements are illustrated in Figure 2, below. The PSC is not shown as an overarching entity for the project, as it was not utilised in this capacity (refer discussion below, in paragraphs 130 to 135). This relatively weak relationship to the project is indicated with a dotted arrow.

³⁹ The membership of the project steering committee was shown in original Project Document (Implementation Arrangements, Figure 5, page 67 of the ProDoc) to consist of the UWI, Project Advisory Committee (PAC), GEF focal Point and UNEP/DTIE)

⁴⁰ Project document: The diagram describing Implementation Arrangements Figure 5, page 67.

⁴¹ Project document: Section 6: Monitoring and Evaluation Plan, paragraph 130 (page 71) and Table 2, Summary M&E Plan.

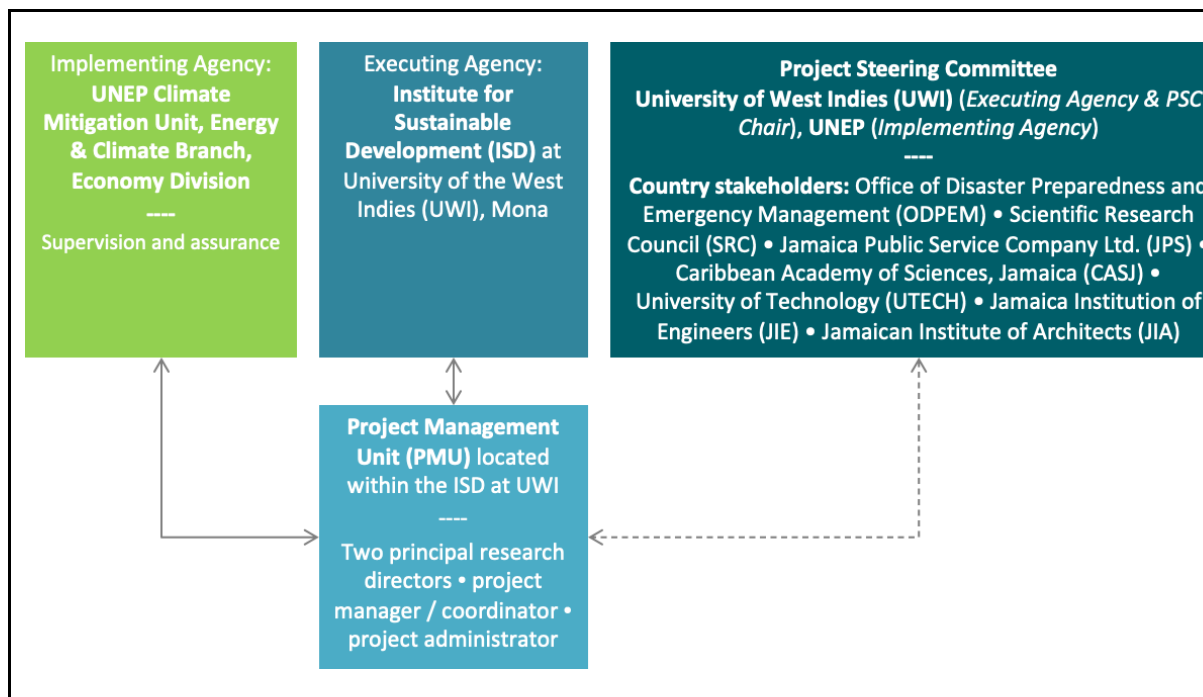


Figure 2: Organogram of the LGGE Promoting Energy Efficiency and Renewable Energy in Buildings in Jamaica with key project key stakeholders

129. The initial project design had anticipated the establishment of a separate Project Advisory Committee (PAC) with representation from a diverse group of stakeholders representing government, the building industry and academia⁴². The expectation was for the PAC to:

- i. help oversee the project, and track progress towards the objectives,
- ii. receive periodic reports on progress,
- iii. make recommendations to UNEP concerning the need to revise any aspects of the Results Framework or the M&E plan.
- iv. ensure operational coordination among the different government agencies, professional bodies, donors, and other interests groups working in the same sector, and
- v. be responsible for the dissemination and institutionalization of the lessons learned under the project.

130. In practice, at implementation, the PAC and PSC were consolidated into one forum that was referred to as the PSC for the project (all further reference to the PSC is to this consolidated entity). This consolidation avoided duplication and unnecessary demands on stakeholders' time.

131. Representation on the PSC was not as broad as was intended in the Project Document for the PAC. It did not include any representation from government departments,

⁴² Ministry for Water, Land, Environment, and Climate Change (MWLECC); Ministry of Science, Technology, Energy, and Mining (MSTEM); Ministry of Transport, Works, and Housing (MTWH); Jamaica Institution of Engineers (JIE); Jamaica Public Service Company Ltd (JPSCo); Office of Disaster Preparedness and Emergency Management (ODPEM); Jamaica Institution of Architects (JIA); The Institute of Sustainable Energy, University of Technology, Jamaica (UTech); The Scientific Research Council (SRC); Jamaica Hotel and Tourist Association (JHTA); Inter-American Development Bank (IDB); Incorporated Masterbuilders Association of Jamaica (IMAJ); Bureau of Standards (BoS); Centre of Excellence for Renewable Energy (CERE); Jamaica Green Building Council (JGBC); Environmental Regulatory Authority (ERA); Private Sector Organization of Jamaica; Petroleum Corporation of Jamaica (PCJ); University of Technology (UTECH); Caribbean Academy of Sciences, Jamaica (CASJ).

financial institutions, the Bureau of Standards or the hotel and tourism industry, as planned for the PAC. It also did not include representation by the GEF Focal Point. The Evaluation was unable to understand what informed the initial expectation for active participation by the various stakeholders as no records are available of the design stage stakeholder consultation. Certainly, the expected frequency of monthly PAC meetings as documented in the Project Document, appears overly ambitious. As such, this is considered partly a weakness in design and partly a weakness in implementation (refer related discussions under *Section V. B: Quality of Project Design, Section V. I: Factors Affecting Performance*)

132. No documentation is available that shows the formal constitution of the PSC. There is no mandate, Memorandum of Understanding (MOU) or charter that documents the role of the committee or the required membership composition. There is no evidence of letters of appointment or delegation of PSC members by organisations. These would have been helpful to ensure the PSC plays the intended role and to ensure stakeholder commitment and continuity throughout the extended project implementation period.
133. Meeting records are available for only three PSC meetings, held in 2016, 2017 and 2019. The 2017 meeting report has a caption that reads: “*4th Steering Committee Meeting*”, suggesting that two additional meetings were held for which documentation is not available.
134. Meeting reports show a strong focus on the demonstration projects. This impression was echoed during stakeholder interviews. All unprompted feedback regarding the project scope and role of PSC focused on the ZNEB. When prompted, a few stakeholders were also able to mention the National Housing Trust (NHT) building retrofit. This is partly understandable, considering it represented 62% of the project budget and presented practical implementation challenges that required consideration and deliberation.
135. As summarised below (Table 6), there is limited evidence that suggests the PSC contributed the intended functions and provided the dissemination role anticipated at design stage. The PSC is found to have been underutilised as governance forum for the project. As implemented, it offered very limited support to the project.

Table 6. PSC effectiveness as governance structure

Intended role	Performance status	Evidence
Help oversee the project, and track progress towards the objectives	Partially achieved	Periodic PSC meetings where feedback was provided on project progress. Indications that PSC members had facilitated resolution of specific hurdles pertaining to the ZNEB. No evidence of the PSC tracking progress towards broader project objectives. No evidence of the PSC reviewing progress against the Results Framework. The PSC did assist with addressing co-financing reporting challenges <u>among PSC members</u> (i.e. no evidence of the PSC engaging non-members on this issue).
Receive periodic reports on progress	Achieved	Meetings reports included a progress presentation.
Make recommendations to UNEP concerning the need to revise any aspects of the Results Framework or the M&E plan	Not achieved	No such recommendations in evidence, even though such revisions would have been useful.

Intended role	Performance status	Evidence
Ensure operational coordination among the different government agencies, professional bodies, donors, and other interests groups working in the same sector	Not achieved	The various parallel initiatives led by government and other development partners without the prior knowledge of this project and without timeously exploring synergies and opportunities for collaboration shows this function was not provided by the PSC. Most likely, this is ascribed to (i) not having government representation on the PSC, (ii) the PSC's narrow view of the project and (iii) limited awareness by PSC members of their scope of responsibilities.
Dissemination and institutionalization of the lessons learned under the project.	Partially achieved	The project document had anticipated that the PSC would play a key role in dissemination of project learnings and information and ensuring integration of demonstrated practices into various areas of work. Meeting reports noted select examples where PSC members had facilitated information sharing and promoted the ZNEB within their networks.

E. Changes in design during implementation

136. There were no revisions to the project scope and results during the implementation period.
137. Two no-cost extensions to the project implementation timeframe were agreed and reflected in amendments of the Project Cooperation Agreement. Details of these are captured in Table 23 in *Section V. F: Efficiency*. The project duration was originally intended to last 4 years ending in January 2017, but eventually lasted 7 years and 2 months, concluding in March 2020.
138. Even though it was originally planned and budgeted in the Prodoc, the project did not conduct a mid-term review. No element could be gathered during the evaluation to explain why.

F. Project financing

139. The total project budget was USD 7,461,000 of which USD 2,361,000 was financed by the Global Environment Fund (GEF), and USD 5,100,000 to be financed through in-kind contribution by the executing agency (UWI) and nine different institutions. A breakdown of co-finance commitments and disbursements is provided below.

Table 7. Overview of project co-finance

Name of co-financier	Type of co-finance	Co-finance commitment (USD)	Co-finance disbursed (USD) (June 2019)	Type
Jamaica Public Service Company	In-kind	100 000	2 570 244	In-kind
Office of Disaster Preparedness & Emergency Management	In-kind	100 000	26 200	In-kind
Jamaican Institute of Architects	In-kind	250 000	89 250	In-kind
Jamaican Institute of Engineers	In-kind	450 000	127 150	In-kind
University of Technology of Jamaica	In-kind	750 000	95 500	In-kind
Scientific Research Council of Jamaica	In-kind	500 000	28 350	In-kind
University of the West Indies	In-kind	1 900 000	2 073 295	In-kind
Caribbean Academy of Sciences, Jamaica	In-kind	500 000	278 193	In-kind

Name of co-financier	Type of co-finance	Co-finance commitment (USD)	Co-finance disbursed (USD) (June 2019)	Type
UNEP	In-kind	50 000	9 775	In-kind
Inter-American Development Bank	Cash	400 000	362 997	In-kind
Government of Jamaica	Cash	100 000	-	-
University of the West Indies	N.A.	-	18 375	Cash (grant)
Total Co-financing		5 100 000	5 679 329	

140. The last co-finance report, dated June 2019, reflected total co-finance of USD 5,669,555. This reported total was updated to include co-finance from UNEP, previously not included in the total⁴³, to bring the total co-finance to USD 5,679,329.
141. Of this total contribution, USD 18,375 is shown as a grant from UWI, while the remainder are all in-kind contributions. The largest share of co-finance was contributed by UWI and the Jamaica Public Service Company (JPSCo). The contribution by UWI was primarily the land on which the NZEB has been constructed.
142. The project faced significant challenges with realising the co-finance anticipated at design stage, as evident in the significant differences between the commitments and disbursements shown above (Table 7). This is partly ascribed to the change in support for the project anticipated at design stage (refer earlier discussion paragraphs 119 and 120). The largest reason was however that co-financiers did not understand what their co-finance commitment entailed, despite submitting signed co-finance letters at design stage. This again, can be partly ascribed to staff changeovers within institutions and partly to concerns regarding the terms of such commitments. To address this and alleviate concerns, the PMU developed a co-finance template for co-financiers on which they could capture their contribution of time and resources to the project and translate these into a monetary value.
143. Consequently, the values disbursed do not in any way correspond with the initial commitments. This was confirmed by several stakeholders – at UNEP, the PMU and co-financiers - during interviews. Progress reporting also reflect the challenges of the PMU in this regard. Later co-financing reports thus include completed templates from co-financiers that describes their contributions. For example, the substantial JPSCo contribution included support with resolving the physical grid connection for the ZNEB and a parallel EE communication and awareness campaign run to promote EE in the country.
144. While not initially reflected as a co-finance partner, the collaboration with the National Housing Trust (NHT) for the retrofit of the NHT headquarter building, leveraged an estimated USD 638,123.96 in investment. The NHT funded the implementation of retrofit solutions that was recommended by an audit and design funded by the project.
145. The final project expenditure, as provided by the FMO on 9 March 2022, was USD 7,491,146.14. This includes the reported co-finance (refer Table 7, above) as well as USD 1,811,817.14 expenditure against the GEF grant i.e. spending 77% of the available grant funding.

⁴³ This exclusion was checked with the FMO and confirmed as an erroneous omission.

IV. THEORY OF CHANGE AT EVALUATION

146. As originally stated, the project logic or results framework muddled activities, outputs and outcome statements. The original statements are not in line with the UNEP Glossary of results definitions⁴⁴. Output and outcome statements would benefit from clarifying the intended beneficiaries with supporting indicators that can clearly demonstrate the contribution i.e. Specific, Measurable, Achievable, Relevant, Time-bound (SMART). It was therefore reformulated, as described below in Table 8 and the reformulated statements used to prepare a Theory of Change for the project.

Table 8. Justification for Reformulation of Results Statements

Formulation in original project document(s)	Formulation for Reconstructed ToC at Evaluation Inception (RTOC)	Justification for Reformulation
IMPACT		
Not explicitly stated	A reduction in greenhouse gas emissions from energy use in buildings in Jamaica and other tropical and sub-tropical regions.	With reference to the above statement and the Project document (para. 62) that noted electricity use in buildings made up approximately 55% of all electricity consumed in Jamaica. The GHG emission reductions calculations suggest an ambitious target for energy use and emissions to be reduced as a consequence of this intervention (ProDoc para. 68 – 80).
Not explicitly stated	All building forms and technologies in Jamaica incorporate advanced energy efficient and sustainable energy measures, aspiring towards net-zero energy buildings	This is understood to be the intended impact of this project based on, for example: <u>"The goal is a modal shift in building forms and technologies, making zero net energy construction the preferred option in tropical and sub-tropical regions"</u> The project objective is stated at country level. The project ambition is however broader, as suggested also by para. 66, bullet 7: "Working groups will be established between UWI and these regional organizations to coordinate regional workshops and activities for disseminating lessons and promoting EE in buildings <u>throughout the Caribbean region and beyond.</u> " And para. 81: "The Project will therefore support SBCI's work in aligning efforts that will enable policymakers and building sector stakeholders to apply life cycle approaches <u>in all new and refurbished buildings worldwide.</u> "
PROJECT OBJECTIVE		
Increase energy efficiency (EE) and the use of renewable energy (RE) in the building sector in Jamaica thus reducing energy consumption and greenhouse gas (GHG) emissions	-	As originally stated, this becomes redundant in the context of the reformulated impact and intermediate states. <i>The project objective remains a requirement of the GEF.</i>
INTERMEDIATE STATES		
Not explicitly stated	Large scale adoption of EE and RE technologies and solutions among building professionals and developers in Jamaica.	From the project document, para. 6: "to demonstrate the necessary technologies and applications, and as a means of (i) introducing best practices in architecture

⁴⁴ The UNEP Glossary was not available in its current form at design stage.

Formulation in original project document(s)	Formulation for Reconstructed ToC at Evaluation Inception (RTOC)	Justification for Reformulation
		and development planning, (ii) promoting related research and business opportunities, and (iii) supporting development and implementation of appropriate regulatory and technical tools to encourage higher standards of energy efficiency and increased use of renewable energy sources within the Caribbean built environment.”
-	Continual enhancement of policy and regulatory environment towards a zero-net energy building goal for the country.	From the preceding statement as well as the project document, para. 66, bullet 5: “Data from this project will be used to support the New Energy Efficiency Building Code (EIBC) in Jamaica to be promulgated (provisionally) in 2012, and will inform the next revision of the national building codes. The personal participation of the Minister of Housing in the project will ensure that the new building codes reflect the lessons learned in this project.”
-	Increased market demand for and investment in high efficiency and clean energy technologies and solutions in the region.	This has been adapted from the original statement of Outcome 3.3
-	Improved thermal comfort levels for building occupants across all sectors (residential, commercial, etc.)	<p>This is not stated explicitly anywhere in the document, but is thought to be an implied desired end state that could readily be monitored.</p> <p>Thermal comfort is one of the criteria in sustainable building. It is an indoor environment factor that effects health and human performance of occupants, chiefly determined by temperature, humidity and air movement. It assesses design compliance against conditions required for thermal comfort as described by ANSI/ASHRAE Standard 55. With climate change, thermal comfort is expected to be adversely impacted.</p> <p>In tropical regions, climatic factors notably affect the indoor thermal comfort in a building. Green / sustainable buildings aim to reduce the input of resources such as energy, materials and water and waste production i.e. improving the quality of the building indoor environment without compromising the environment.</p> <p>This concept is introduced in the ProDoc in Para 1, page2 when it speaks of: “<i>The greatest need for innovative and cost-effective building solutions lies in tropical and sub-tropical regions, as it is more technically difficult to keep the interior of a building cool and dry in a hot, humid climate than to keep it warm in a cold climate. Levels of energy efficiency in most of the buildings in the Caribbean region, for example, are exceptionally low, with very high cooling loads. However, this means that the building sector in tropical and sub-tropical regions has a considerable potential for positive change, to become far more efficient in terms of resource use,</i></p>

Formulation in original project document(s)	Formulation for Reconstructed ToC at Evaluation Inception (RTOC)	Justification for Reformulation
		<i>less environmentally intensive, and less costly."</i>
PROJECT OUTCOMES		
Outcome 1. Energy audit (<i>methodology</i>) ⁴⁵ to model consumption in existing building types and integrated plan for construction of a demonstration prototype net-zero emission building to establish proof of concept in the sub-tropics, and test and develop building practices, standards and codes.	-	Original statement phrased as a deliverable, rather than an outcome. Parts of this statement incorporated into output statements (Outputs 1.1 – 1.4). This outcome statement that corresponds with the activities and outputs of Component 1 (development of Technical knowledge products) has been restated to reflect the adoption of the knowledge into building practices. Refer new Outcome 1
Outcome 2.1 Advanced retrofit solutions to demonstrate to concerned agencies and stakeholders the economic and environmental benefits of retro-fitting in terms of applying energy efficiency (EE) and renewable (RE) technologies in existing buildings	-	Original statement phrased as a deliverable, rather than an outcome. Shifting the focus to the latter part of the statement, that implies the targeted outcome i.e. "applying EE and RE technologies in existing buildings". The contribution of Component 2: demonstrated benefits of the retrofit solution, is captured in the new Outcome 2 below.
Outcome 2.2. Demonstration to policymakers, government officials, owners of buildings and houses, architects, and construction companies of the technical feasibility and the environmental and economic benefits of retrofitting existing buildings	-	Original statement phrased as an activity, rather than an outcome. The contribution of Component 2: demonstrated benefits of the retrofit solution, is captured in the new Outcome 2 below.
Outcome 2.3 Sustainable retro-fitting operations including the availability of affordable financing	-	Original statement phrased as a deliverable, rather than an outcome. The contribution of Component 2: demonstrated benefits of the retrofit solution, is captured in the new Outcome 2 below.
Outcome 3.1 Net-zero energy demonstration building including assembled building components and modules that show policymakers, government officials, homeowners and buyers, architects, and construction companies the feasibility and environmental benefits of a net-zero energy building.	-	Original statement phrased as a deliverable, rather than an outcome. The contribution of Component 3: demonstrated benefits of the retrofit solution, is captured in the new Outcome 2 below.
Outcome 3.2 Efficient operation and maintenance of the net-zero energy demonstration building and <i>establishment of permanent learning process to develop more advanced EE and RE applications and increase EE and the use of RE in buildings in the future</i>	-	Original statement phrased as an activity, rather than an outcome. The second part of this statement (<i>indicated in italics</i>) has been incorporated as an output i.e. new Output 2.4 The contribution of Component 3: demonstrated benefits of the retrofit solution, is captured in the new Outcome 2 below.
Outcome 3.3 Increased investments in more energy efficient lighting, heating, and cooling solutions in new buildings and sustainable market transformation to net zero emission buildings.	-	This statement has been amended and <u>moved</u> to the intermediate state as an outcome that will reasonably only be achieved well after the project implementation timeframe.
-	1. Inclusion of advanced EE and RE practices, solutions and technologies in	The intended outcome of the technical knowledge developed under component 1

⁴⁵ Project Document includes "methodology" as part of the statement.

Formulation in original project document(s)	Formulation for Reconstructed ToC at Evaluation Inception (RTOC)	Justification for Reformulation
	the design, development and renovation of buildings in Jamaica.	is to encourage the application thereof i.e. to have building professionals, property owners and developers, and policy makers incorporate advanced EE and RE into their respective areas of influence (i.e. new buildings and new policy instruments (standards, codes and/or national targets)). Outcome 4 addresses the policy aspect. Outcome 1 reflects the adoption by building designers and developers.
-	2. Increased investments and uptake of demonstrated EE and RE measures in renovated and new buildings in Jamaica.	The demonstrated benefits of advanced EE and RE retrofit pilot are expected to lead to increased investment in the demonstrated measures.
Outcome 4.1 National policy and plan for retrofitting all suitable existing buildings and comprehensive policy and regulatory framework for development of net-zero energy buildings	3 Policy and regulatory environment amended to instruct minimum EE and clean energy requirements for all future buildings and renovations through building codes and standards	Too many points covered in one statement. Unpacked into two outcomes i.e. (i) that focuses on the amended regulatory framework including building codes, and (ii) a plan for retrofitting of existing buildings. First part stated here as Outcome 4.1 The first statement is also amended to <u>not specify</u> zero net emission buildings. National policy and strategy may aspire to highly ambitious targets however, common practice is for standards and codes to mandate minimum performance standards i.e. a minimum efficiency requirement that is informed by a cost / benefit analysis or economic impact assessment. It is not realistic to expect a regulatory framework to <u>dictate</u> net zero emission buildings as a project outcome.
	4 National plan for retrofitting all suitable existing buildings to the minimum efficiency standards in place.	Original statement for outcome 4.1 split into two, with the second part reflected here as new Outcome 4
Outcome 4.2 Designation of regional or extra-regional testing facility to promote enforcement of EE standards for buildings in the region	5 Sustainability of clean energy benefits to consumers and the economy secured through a quality supervision system and functional test facilities established.	Original statement 4.2 phrased as an activity. Statement renumbered and rephrased to reflect the intended outcome of having test facilities in place, i.e.: high quality equipment that perform as promised and will last thereby ensuring sustained benefits to all. It is proposed that the word "designated" is replaced with "functional" since the process for and purpose of designation is not clear.
Outcome 5. Environmental and economic benefits of the Project are widely understood in Jamaica and other areas with similar climatic conditions	6. Learnings integrated into various spheres of policy, planning, academic teaching and research programmes as well as building practices in Jamaica.	Outcome amended to reflect the expected contribution of capacity building among various beneficiaries of training
	7. Knowledge management, information sharing, learning, and collaboration networks embedded among key local stakeholders and initiated within the region.	This additional outcome is included in response to GEFSEC comment and project response regarding the need for meaningful knowledge sharing i.e targeting active collaboration rather than information push only.
OUTPUTS		
Component 1		
Output 1.1 Climatically relevant designs and energy efficient technological building solutions, practices, standards, and codes developed by local and regional professionals for testing.	1.1 Project Advisory Committee (PAC) members and their networks [OR more specifically: building professionals, property owners, developers and policy-makers] have access to climatically	This is stated as a deliverable, not an output. Rephrased to represent perspective of beneficiary.

Formulation in original project document(s)	Formulation for Reconstructed ToC at Evaluation Inception (RTOC)	Justification for Reformulation
	relevant designs & energy efficient technological building solutions and practices to inform the development of building standards and codes.	You should find a way to include your following comment here: "Standards and codes are only reviewed under component 4 – this is input to these."
Output 1.2: Detailed assessment of energy demand patterns and associated opportunities for energy savings in buildings in (sub)tropical regions	1.2 Project Advisory Committee (PAC) members and their networks [OR more specifically: building professionals, property owners, developers and policy-makers] have access to locally relevant energy demand patterns and associated opportunities for energy savings in buildings	Original output stated as an activity / deliverable, not as an output. Have rephrased to clarify beneficiaries and as an output.
Output 1.3: General design of highly innovative core building systems, components, and solutions. ⁴⁶	1.3 Project Advisory Committee (PAC) members and their networks [OR more specifically: building professionals, property owners, developers and policy-makers] have access to generic design elements for highly innovative core building systems, components, and solutions relevant to tropical / subtropical climates.	It is not apparent from the original whether it is a generic design of a single building demonstrating the various elements or general design of the different elements listed. The work plan refers to a "basic design" incorporating various elements. This is supported by the actual outputs that contain the design report and related material of the net zero energy building (Output 3) containing the various elements. Have therefore rephrased (i) to clarify the scope of the output, (ii) stated as an output as relevant to beneficiaries, and (iii) state more specifically in terms of the value add i.e. for specific climatic conditions.
Output 1.4: Identification of possible building practices, standards, and codes for achieving higher EE and increased use of RE in buildings in tropical and sub-tropical countries at affordable cost.	1.4 Policymakers and technical experts have access to recommended specifications and provisions for inclusion into revised building codes and standards to achieve higher EE and increased use of RE in buildings in tropical and sub-tropical countries at affordable cost.	Original output is stated as an activity, not as an output. Rephrased, also using the workplan, to state the output from the perspective of beneficiaries.
N/A	1.5 Building professionals and policymakers have access to a selection of cost/benefit methodologies, Cost benefit analyses for various technologies and solutions, and financial and economic evaluation models to support planning and design.	Proposed to move this output (amended) from Component 5 (Output 5.4), which is focused on the dissemination of information, to this component that is focused on developing knowledge material.
Component 2		
Output 2.1: Assessment and identification of most advanced retrofit solutions to increase EE and use of RE in existing buildings while withstanding anticipated impacts of climate change.	N/A (see proposed consolidation after Component 3)	Stated as an activity, with the second part of the statement (showed in italics) an outcomes that overlaps with the targeted outcome of Component 3 except for the focus on existing buildings versus new.
Output 2.2: Identification and retrofitting of a suitable high-profile building to demonstrate the environmental and economic benefits of retrofitting existing buildings.	N/A (see proposed consolidation after Component 3)	Stated as an activity. The second part of the statement (showed in italics) echoes the demonstration contribution from the zero-net energy building.
Output 2.3: Increased awareness among architects, planners, building engineers, and other relevant experts of the economic benefits of retrofitting and development of a financing mechanism to make retrofitting affordable	N/A (see proposed consolidation after Component 3)	This output is shared between Component 2 and 3, with the small difference of targeting existing versus new buildings. Second part of the output after "and.." (indicated in italics) is a separate concept.

⁴⁶ The difference between output 1.1 and 1.3 is not clear and therefore whether these are two distinct outputs or can be stated as one. This was not clarified during Inception Phase with the project team. Will be discussed as part of the review.

Formulation in original project document(s)	Formulation for Reconstructed ToC at Evaluation Inception (RTOC)	Justification for Reformulation
		<p>The <u>only supporting activity</u> that is documented is Activity 2.3.2: "Encourage finance institutions and policy makers to give incentives to make retrofitting affordable." This does not correlate with an output that tasks the project to deliver financing mechanisms. Suggest this becomes an outcome that is driven by the efforts (data and communication) by the project and participation of the IEDB on the PAC.</p> <p>But not – based on the current read of the project document – an output under the control of the project team.</p>
Component 3		
Output 3.1: Detailed design and installation and construction of integrated technological solutions and associated building components to (i) test possible building practices, standards, and codes; and (ii) develop energy efficiency ratings for components and integrated combinations/ solutions	N/A (see proposed consolidation after Component 3)	This output statement is partly stated as a deliverable and encompasses multiple contributions of value to beneficiaries. The proposed restructured version (refer below) unpacks the different components into distinct outputs.
Output 3.2: Continuous assessment of the performance of the building and subsystems and development of EE and resource-use benchmarks and performance levels	N/A (see proposed consolidation after Component 3)	Stated as an activity.
Output 3.3: Increased awareness among architects, planners, building engineers, and other relevant experts of the advanced building technologies to increase EE and the use of RE in buildings and <i>development of suitable financing mechanisms</i>	N/A (see proposed consolidation after Component 3)	<p>Overlaps with the original Output 2.3.</p> <p>Has been partly incorporated into the revised Outcome 1.</p> <p>The second part of the Output (<i>indicated in italics</i>) is unclear. As it stands, it is stated as an activity. Even if rephrased to an output it has limited supporting activities document in the workplan for achieving this. <u>There is no obvious causal pathway evident for the inclusion of this output in the TOC.</u></p>
Suggested consolidation of Components 2 and 3.	-	There are multiple overlaps and shared outcomes between component 2 and 3. Ideally components should be designed to be mutually exclusive. It is therefore suggested that these two be combined into one component consisting of the investment aspect of the project that is focused on demonstrating EE and RE technologies and solutions in both new and existing buildings.
N/A	2.1 Building professionals and policymakers have access to demonstrated and quantifiable economic and environmental benefits of retrofitting EE and RE technologies and solutions in <u>new and existing buildings</u> in (sub-) tropical climates.	
N/A	2.2 Building professionals and policymakers have access to a portfolio of tested EE and RE technologies and solutions with proven performance record and benchmarks in new and existing buildings.	
N/A	2.3. Technical experts and policymakers have access to tested recommendations for improved energy efficiency and green	

Formulation in original project document(s)	Formulation for Reconstructed ToC at Evaluation Inception (RTOC)	Justification for Reformulation
	building standards, codes and practices for new and existing buildings.	
N/A	2.4. Educational demonstration facility located within an academic institution is available to students in the built environment to facilitate experiential learning and encourage / inspire innovation among new generation of building professionals.	Adapted from the original Outcome 3.2 and original output 5.2 statements.
Component 4	New Component 3	
Output 4.1: Review of existing regulations and practices for retrofitting of existing buildings and identification of key policy options to ensure retrofitting of all suitable buildings	3.1. The Minister of Housing and other participating policymakers participated in formulating preferred/recommended standards, and building codes for achieving higher EE in buildings at reasonable cost, specific to the conditions in tropical and sub-tropical countries.	Stated as an activity / deliverable with multiple activities. Second part (<i>shown in italics</i>) included in the revised statement 4.2
Output 4.2: Making policy makers fully aware of the potential for substantially increasing EE and the use of RE in buildings and the development of corresponding building codes and regulations	3.2. Policymakers are cognisant of the opportunities identified in existing policy, regulations & practices for inclusion of EE and clean energy measures in building retrofits.	Stated as an activity. Restated as an output with second part of original Output 4.1 incorporated.
Output 4.3: Development of national quality supervision systems and strengthening of testing facilities	3.3. Technology providers and regulatory body(ies) have the benefit of a national quality supervision system with fully operational (designated?) testing facilities to safeguard the newly created market for clean energy technologies.	Stated as an activity. Restated as an output. This is <u>assumed</u> to relate to imported and/or locally manufactured equipment/installations as it is not clearly described in any of the documentation. As before, the word "Designated" is not clear or clarified and therefore suggested to change to "fully operational" which should include all accreditations and processes for functioning. The causal pathway for this output is not clear. The project document does not provide adequate information to understand the reasoning for this output. The <u>assumption</u> used to reformulate this statement is that building codes and standards will prompt the use of new technologies that meet certain specifications and test centres are required to verify claimed performance. This will have to be confirmed with the project team and the TOC refined accordingly.
Output 4.4: Assessment of existing testing facilities, consultations, and preparation of framework agreements	Included above.	Stated as activities.
Component 5	New Component 4	This component was the focus of Council Comments captured in the CEO Endorsement request. It requested that the component offer a more active contribution than knowledge management. While the response to the Council comments acknowledged this, it is not fully reflected in the Outputs. The evaluation will look at whether this was effectively implemented for maximum reach and influencing the behaviour of all stakeholders.
Output 5.1: Preparation and implementation of education and training programs and media campaigns for	4.1. Increased knowledge among a diverse range of stakeholders (policymakers, building professionals,	Statement revised from activity to output.

Formulation in original project document(s)	Formulation for Reconstructed ToC at Evaluation Inception (RTOC)	Justification for Reformulation
Jamaica and the Caribbean region	financial institutions, regional representatives and general public) regarding net-zero energy and green building opportunities and benefits in (sub-)tropical climates.	
Output 5.2: Establishment of the demonstration retrofit building and the net-zero energy building to serve as information dissemination points.	4.2. Online knowledge platform hosting knowledge / learning materials, studies, cost/benefits analyses methodologies and financial and economic evaluation models available to national, regional and global policymakers and building professionals.	Original output stated as an activity. The output has been rephrased based on the Component description in the ProDoc, incorporating the original Output 5.4 to reflect the broader knowledge platform with wider reach to be established by the project. Using the buildings as information dissemination points would be an activity under a broader communication plan for the project (Refer revised Output 5.4).
Output 5.3: Development of procedures for sharing information with Caribbean nations and other (sub)tropical regions.	-	Original statement phrased as an activity. Based on the understood output (i.e. ensuring a broader reach of the available information) it is effectively absorbed under Output 4.1 and 4.2.
Output 5.4: Preparation and dissemination of cost/benefits analysis methodologies and financial and economic evaluation models	-	Phrased as an activity. Again, assuming the intention is to enhance the reach of the developed knowledge, the output is effectively absorbed under Outputs 4.1 and 4.2.

147. There was no Theory of Change presented in the ProDoc, therefore in line with the UNEP Evaluation Office guidance, a Theory of Change (TOC) at Inception was prepared as part of the evaluation process, drawing heavily on the results framework and ProDoc. This reconstructed TOC was included in the inception report and shared with the PMU and key UNEP team members for consideration. The TOC at Inception was assessed against general interview responses and shared with the project team during interviews for further consideration and input to form the TOC at Evaluation presented below .

148. The TOC is based on the presumption that compelling evidence from the demonstration buildings (both greenfield and retrofit), combined with strong advocacy and actively leveraging the PAC as a suitable platform with wide reach, would prompt a paradigm shift in terms of building standards, design, construction, and operation in the country and potentially also throughout the Caribbean and other similar climatic regions in the world⁴⁷.

149. Based on this framework and logic, it would be reasonable to assume that the resulting enabling / regulatory environment and catalytic effect of the project would continue to contribute positively towards EE, RE and the reduction of carbon emissions for Jamaica, the Caribbean and potentially other tropical and sub-tropical regions, well into the future.

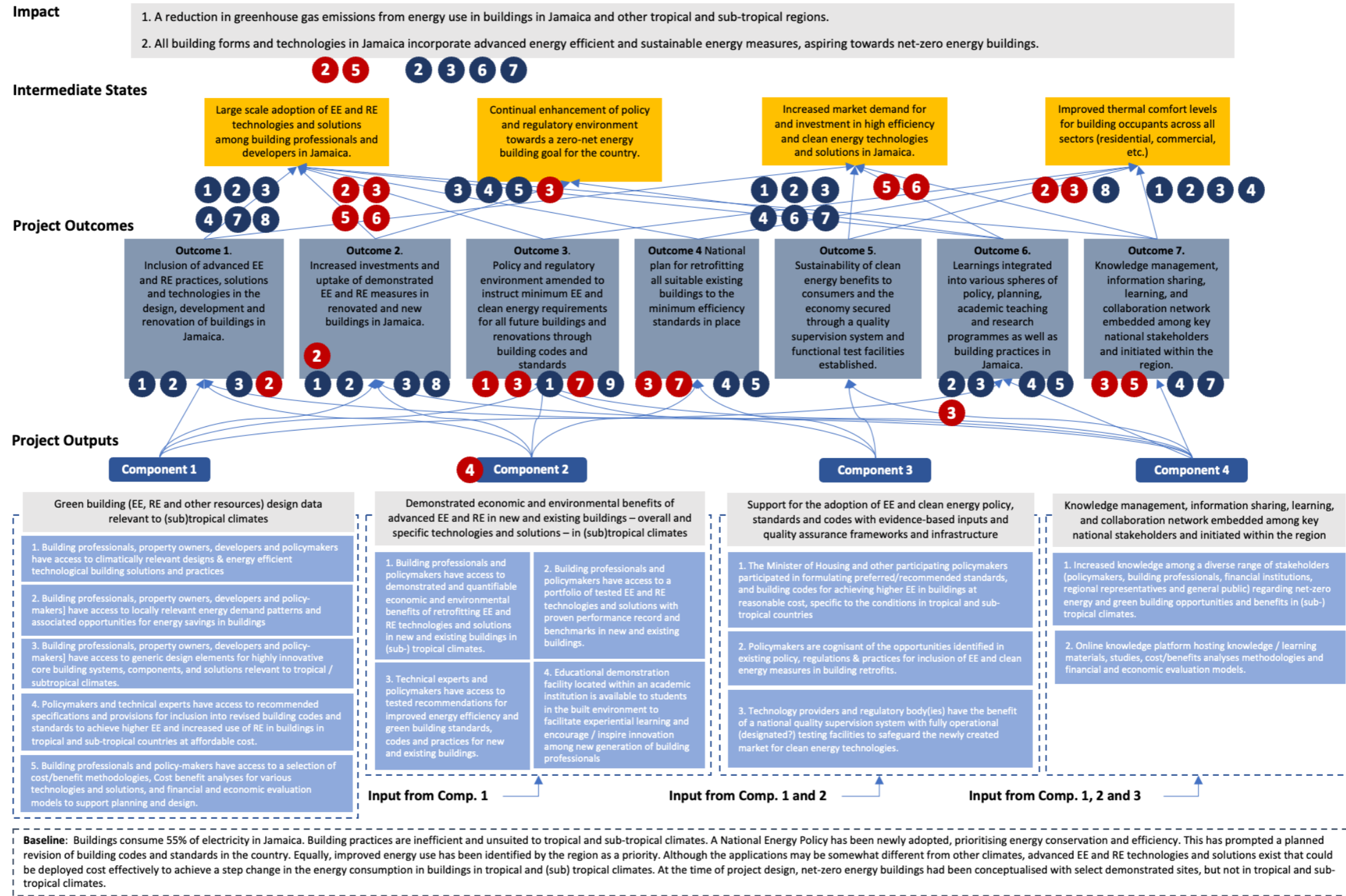
150. The project also assumed strong buy in from both public and private sector players, and a reach outside of the borders of Jamaica, stating that it provided: "...a unique institutional and technical cooperation platform between all the main parties involved in development throughout the region."

⁴⁷ Project Document references: para.8, page 4: "The goal is a modal shift in building forms and technologies, making zero net energy construction the preferred option in tropical and sub-tropical regions" and para. 2, page 2: "main objective is to research and develop practical, working solutions that will transform building policies and practices, followed by the implementation of appropriate regulatory and technical tools that will mainstream the lessons and transform the opportunities for promoting energy efficiency and increased use of renewable energy sources".

151. It assumed timely input available from the demonstration facilities to inform the policy and standards process.
152. It further assumed that having the National Energy Policy (NEP) in place and lays the groundwork: *“The Government’s new Energy Policy is therefore intended to overcome the barriers to the implementation of ECE⁴⁸ initiatives. It addresses the need to establish an appropriate institutional framework, raise public awareness and enable the provision of financing. The Government intends to lead by example, ensure that the public sector implements ECE initiatives, and engage the private sector in this national drive.”*
153. At an impact level, the project targeted a *“number of clear global environmental benefits will result from the successful implementation”* and *“the associated investments in energy efficiency, energy productivity and clean energy technologies.”* *“The goal is a modal shift in building forms and technologies, **making zero net energy construction the preferred option in tropical and sub-tropical regions.**”* *“The long-term global environmental benefits are therefore significantly larger than the technical estimates presented in this document”*.
154. Causal pathways were suggested in the Project Document as stated in para. 8, page 4: *“The solutions, technical tools, policy measures, regulatory frameworks and building standards to be developed in this project will significantly increase the size of the market for energy efficiency and renewable energy technologies in Jamaica, across the Caribbean region, and in the other tropical and sub-tropical regions of the world.”*
155. Drawing on all these, the reconstructed ToC at Evaluation and results framework have been developed to highlight causal pathways and suggest indicators to gauge the delivery of intended outputs and outcomes of the Project. This is illustrated below in Figure 3 and described in subsequent paragraphs.

⁴⁸ ECE = Energy Conservation and Efficiency

Figure 3: Reconstructed theory of change at Evaluation



Assumptions #

1. Government adopts necessary regulatory framework. 2. Compliance with the EE codes, standards & regulations. 3. Government and other PAC players fully cooperate with dissemination and integration of learnings. 4. Available technologies and solutions can deliver a zero-net energy building in (sub) tropical climates. 5 National and regional networks exist that can be strengthened and leveraged to share learnings and integrate into different practices and other areas with similar climatic conditions. 6. Willingness to change / interest in RE & EE from households, developers, building operators and professionals. 7 National Energy Policy lays groundwork for advanced EE and RE in building codes and standards.

Drivers #

1. The availability of relevant and vetted design data will support improved design and construction. 2 Awareness and knowledge will lead to adoption among all role players. 3. Evidence of cost/benefits & performance will change behaviour. 4 Education, training, workshops will facilitate knowledge sharing and encourage adoption. 5 PAC members effectively disseminate and integrate the learnings to various spheres of influence (policy, building codes and standards, design, building practices, etc.) 6. Market push (policies, stds, codes) and market pull (demand created by awareness) together will catalyse a significant shift in energy use in buildings. 7. Establishing knowledge management and regional collaboration structures will create a culture of resource efficiency . 8. Evidence of life-cycle costing will overcome initial capital investment hurdles. 9. Project outputs are in time to inform planned revision of codes and standards.

156. **Baseline.** The LGGE Promoting Energy Efficiency and Renewable Energy in Buildings in Jamaica project was introduced to respond to the heavy consumption of electricity by buildings - estimated by the project document to be as high as 55% of total electricity consumed in the country. Building practices were known to be inefficient and unsuited to tropical and sub-tropical climates. The newly adopted National Energy Policy prioritised energy conservation and efficiency and had prompted a planned revision of building codes and standards in the country. Equally, improved energy use had been identified as a priority for the region. Although the applications may have been somewhat different from other climates, advanced EE and RE technologies and solutions existed that could have been deployed cost effectively to achieve a step change in the energy consumption in buildings in tropical and (sub) tropical climates. At the time of project design, net-zero energy buildings had been conceptualised with select demonstrated sites, but had not been implemented or tried in areas with tropical and sub-tropical climates.
157. **Assuming** the available technologies and solutions could deliver a zero-net energy building in (sub) tropical climates, the project set out to demonstrate that significant efficiency gains could be achieved and, in combination with renewable energy sources, could reduce energy consumption to net-zero without compromising on thermal comfort of the occupants.
158. Through the active involvement of key stakeholders (private and public sector, academia and financial institutions) on the Project Advisory Committee, the project aimed to **leverage** (driver) the demonstrated results to influence policies, planning, targets, commitments, building practices, and create a market for EE and RE technologies in the country and potentially also the region.
159. **Impact.** The intended impact of this project is to have (i) all building forms and technologies in Jamaica incorporate advanced energy efficiency and renewable energy measures, aspiring towards net-zero energy buildings and (ii) consequently to see a significant reduction in greenhouse gas emissions from energy use in buildings in the country and potentially other tropical and sub-tropical regions.
160. This assumes (i) that there would be compliance with building codes and standards, (ii) that the national and regional networks exist that can be strengthened and leveraged to share learnings and integrate into different practices and other areas with similar climatic conditions, and (iii) that this will significantly reduce energy use from conventional and therefore greenhouse gas emissions.
161. It also builds on the project inputs i.e. (i) that awareness and knowledge will lead to adoption among all role players, (ii) that evidence of cost/benefits & performance will change behaviour, (iii) Market push (policies, stds, codes) and market pull (demand created by awareness) together will catalyse a significant shift in energy use in buildings, (iv) that establishing knowledge management and regional collaboration structures will create a culture of resource efficiency and (v) that evidence of life-cycle costing will overcome initial capital investment hurdles.
162. **Intermediate states.** In the medium term, the project expected to (i) trigger large-scale adoption of advanced EE and RE technologies and solutions among building professionals and developers, (ii) ensure continual enhancement of the policy and regulatory environment towards a net-zero energy building goal for the country, (iii) catalyse increased market demand for and investment in high efficiency and clean energy technologies and solutions, and (iv) achieve improved thermal comfort levels for building occupants across all sectors.
163. **Components.** It sets out to achieve this through 4 (originally 5) components. Firstly, (1) by identifying and comprehensively assessing available technologies and solutions, selecting the most appropriate options and design solutions for the specific climatic

conditions accompanied by supporting data, analyses and modelling to substantiate the selection / recommendations. The green building design data or knowledge identified in this component would inform the (2) development of two demonstration projects to effectively demonstrate to building professionals, policymakers, developers and building owners the economic and environmental benefits of advanced EE and RE in new and existing buildings. The technical knowledge and demonstrated benefits were intended to (3) inform the review and revision of building codes and standards. With evidence-based inputs, advanced EE and RE solutions are expected to be adopted into clean energy policy, standards and codes. The outputs from this component also included developing appropriate quality assurance frameworks and infrastructure to ensure the targeted benefits are realised. The fourth component (4) focused on embedding knowledge management, information sharing, learning, and collaboration network among key national stakeholders and introducing it within the region in the interest of sustainability, replicability and continued collaboration.

164. **Outcome 1.** The ready availability of screened design and product data combined with demonstrated benefits will influence building practices in the country and lead to the adoption of EE and RE solutions and technologies. This outcome is based on the availability of relevant and vetted design data that will **drive** improved design and construction by the various building professionals.
165. **Outcome 2.** Demonstrated economic and environmental benefits will overcome barriers to adoption, leading to increased investments and uptake of demonstrated EE and RE measures in renovated and new buildings in Jamaica. This too builds on the groundwork laid with availability of credible data and demonstrated benefits (**driver**).
166. **Outcome 3.** Data and demonstrated benefits will also be used to amend the policy and regulatory environment to instruct minimum EE and clean energy requirements for all future buildings and renovations through building codes and standards. This outcome relies heavily (**driver**) on the PAC members to, including the Minister of Housing and technical working group members for the development of the building codes, to apply the learnings from the demonstration projects and the knowledge portfolio to inform the new standards and codes. It assumes (i) that the Government will progress the planned revisions and adopt the necessary changes to codes and standards, (ii) that project outputs are in time to inform planned revision of codes and standards and (iii) that the PAC members disseminates and integrate learnings into their spheres of influence.
167. **Outcome 4.** The project aims to have the demonstrated benefits from the retrofit project be the driver for a national plan to retrofit all suitable existing buildings to the minimum efficiency standards. It again assumes the PAC members will act on the learnings from the project.
168. **Outcome 5.** The establishment of a quality supervision system and functional test facilities expects to secure the sustainability of clean energy benefits to consumers and the economy. By testing compliance to the required standards, consumers will realise the anticipated benefits in terms of improved thermal comfort, energy and cost savings and reduced impact on the environment.
169. **Outcome 6.** By curating and actively promoting the learnings, facilitating engagement and collaboration and building capacity within the country and the region, the expectation is for learnings to be integrated into various spheres of policy, planning, academic teaching and research programmes as well as building practices in Jamaica.
170. **Outcome 7.** It is also hoped that the practice of knowledge sharing, collaboration, regional cooperation will be embedded and continued through strengthened networks and new interfaces.

V. EVALUATION FINDINGS

A. Strategic Relevance

Alignment to UNEP MTS, POW and Strategic Priorities

171. At the time of adoption, the project aligned with the UNEP Medium-Term Strategy 2010 – 2013, climate change objective stated as: “Strengthen the ability of countries to integrate climate change responses into national development processes” and specifically supported Expected Accomplishment (b): “That countries make sound policy, technology, and investment choices that lead to a reduction in greenhouse gas emissions and potential co-benefits, with a focus on clean and renewable energy sources, energy efficiency and energy conservation.”
172. It further corresponds with the UNEP Medium-Term Strategy of 2014 – 2017⁴⁹, described under the Climate Change Strategic Focus. It specifically aligned with the second Expected Accomplishment: “Low emission growth, energy efficiency is improved, and the use of renewable energy is increased in partner countries to help reduce greenhouse gas emissions and other pollutants as part of their low emission development pathways.”
173. It continues to be relevant in terms of the UNEP Medium Term Strategy for the period 2018 – 2021, aligning with the Climate Change priority area defined as “Transitioning to low-emission economic development, enhancing adaptation and building resilience to climate change”. This priority area in turn maps to, among others, Sustainable Development Goal 7: “Ensure access to affordable, reliable, sustainable and modern energy for all” and Goal 13: “Take urgent action to combat climate change and its impacts”.
174. The project’s contribution aligns with UNEP’s Programme Framework for Subprogramme 1 - Climate Change for 2014-2017, Output 1, “Economic and technical (macroeconomic, technology and resource) assessments of climate change mitigation options that include macroeconomic and broad environmental considerations are undertaken and used by countries and by major groups in developing broad national mitigation plans.”
175. Rating for Alignment to UNEP’s Medium Term Strategy, Programme of Work and strategic priorities is **Highly Satisfactory**.

Alignment to UNEP/GEF/Donor Strategic Priorities

176. The project historic metadata locates it within the fourth Global Environment Facility Operational Program (GEF-4) cycle that ran from 2006 to 2010. The project is well aligned with the GEF-4: Focal Areas Strategic Objectives. Under the Climate Change portfolio, it corresponds with two Strategic Objectives, namely: Promoting energy-efficient buildings and appliances and Promoting grid electricity from renewable sources.
177. At inception, the project aligned with the Global Environment Facility (GEF) Operational Program 5: Removal of Barriers to Energy Efficiency and Energy Conservation⁵⁰ and GEF-5 Climate Change Focal Area, Objective 2: “Promote market transformation for energy efficiency in industry and the building sector⁵¹”. It remained relevant under the GEF-6

⁴⁹ https://wedocs.unep.org/bitstream/handle/20.500.11822/7670/-UNEP_Medium_Term_Strategy_2014-2017-2015MTS_2014-2017.pdf;

⁵⁰ https://www.thegef.org/sites/default/files/documents/OP_5_English.pdf;

⁵¹ https://www.thegef.org/sites/default/files/documents/GEF-5_FOCAL_AREA_STRATEGIES.pdf

Programming that covered the period from July 2014 to June 2018, under the Climate Change Mitigation Focal Area Objective 1: “Promote innovation, technology transfer, and supportive policies and strategies”. Most recently, it continued to align with the GEF-7 Climate Focal Area’s stated Objective 1 to “Promote innovation and technology transfer for sustainable energy breakthroughs”.

178. Rating for Alignment to the GEF’s strategic priorities is **Highly Satisfactory**.

Relevance to Global, Regional, Sub-regional and National Priorities

179. A growing number of countries are pledging to achieve carbon neutrality, or “net zero” emissions, contributing to the global goal of achieving net-zero emissions by 2050. The International Energy Agency (IEA) published a Roadmap⁵² for the global energy sector, to support the transition to a net zero energy system. This includes having more than 85% of all buildings⁵³ (including existing buildings) zero-carbon ready⁵⁴. This would require almost every building on the planet to get to net-zero emissions by the middle of the century to meet global climate goals. The demonstration and advancement of energy efficiency and renewable energy building solutions suited to a (sub-)tropical climate, is therefore strongly aligned to global priorities.

180. Energy remains a strategic priority for all CARICOM countries, as confirmed by the **Caribbean Community (CARICOM) Energy Policy**⁵⁵. It states that: “*One of the priorities of CARICOM Heads of Government is for the Region to embark on a more sustainable pattern of energy supply and end-use for the future through greater utilization of renewable and sustainable energy sources, reduced dependence on fossil fuels and greater efficiency and conservation in the use of energy, within the context of energy security and the desire for a low carbon approach to development.*” It pertinently includes reference to energy efficiency and conservation, buildings and building codes.

181. The CARICOM Energy Policy is supported by the 2015, **Caribbean Sustainable Energy Roadmap and Strategy (C-SERMS)** that targets a 33% reduction in energy intensity by 2027.

182. Following 4 years of preparation, the **Caribbean Centre for Renewable Energy and Energy Efficiency (CCREEE)** was legally established in May 2018 as the implementation hub for sustainable energy activities and projects within the region. CCREEE’s Sustainable Buildings Programme – one of its 7 strategic programmes – aims to improve the energy performance of the building sector in the Caribbean.

183. Over the years, many initiatives have targeted better energy use in Jamaica, including improved diversification of supply, increased share of renewable energy and improved energy efficiency. The **Jamaica National Energy Policy (2009 – 2030)** is “designed to ensure that Jamaica achieves, by 2030, a modern, efficient diversified and environmentally sustainable energy sector”⁵⁶.

184. The National Energy Policy addresses both supply and demand energy issues, highlighting seven key areas that includes (i) security of supply through diversification and increased renewable energy, (ii) modernisation of the energy infrastructure, (iii) development of renewable energy sources, (iv) energy conservation, and (v) eco-efficiency in industries⁵⁷. With this policy, the Government established a goal of 20% of

⁵² IEA (2021), Net Zero by 2050, IEA, Paris <https://www.iea.org/reports/net-zero-by-2050>

⁵³ Most old buildings and all new ones comply with zero-carbon-ready building energy codes

⁵⁴ A zero-carbon-ready building is highly energy efficient and either uses renewable energy directly or uses an energy supply that will be fully decarbonised by 2050, such as electricity or district heat.

⁵⁵ https://caricom.org/documents/10862-caricom_energy_policy.pdf

⁵⁶ As reflected in the Electricity Act, Act 18 of 2015, under the Memorandum of Objects and Reasons (page 43).

⁵⁷ The remaining two focus areas relate to: Development of a comprehensive governance/regulatory framework; and Enabling government ministries, departments and agencies to be model/leader for the rest of society in terms of energy management

renewable energy in the energy mix by 2030. On October 16, 2018, Jamaica's then Prime Minister, Andrew Holness, directed the government to increase the target to 50%.

185. In 2015, Jamaica adopted the Electricity Act which encompasses a comprehensive energy strategy that includes provisions for energy consumption and efficiency, carbon trading and increased use of renewable energy. It complements the National Energy Policy and is intended to support the achievement of the policy objectives.
186. Jamaica gave a commitment at COP 26 on the concrete actions it would take to reduce greenhouse gas (GHG) emissions. In June 2020⁵⁸, Jamaica updated its Nationally Determined Contributions (NDCs) with a particular focus on energy sector (supply and end use)⁵⁹.
187. Interviewees all confirmed the strategic relevance of the project. The ZNEB, in particular, is seen as a unique and invaluable asset for the region, physically demonstrating the opportunities for energy efficiency measures and renewable energy solutions for buildings.
188. Similarly, the NHT building retrofit is an important milestone, demonstrating the opportunities for energy and costs savings in a prominent building and for a stakeholder with significant influence in the housing market.
189. Rating for Relevance to regional, sub-regional and national issues and needs is **Highly Satisfactory**.

Complementarity with Existing Interventions/ Coherence

190. The Promoting Energy Efficiency and Renewable Energy in Buildings in Jamaica project was implemented in parallel with multiple complementary initiatives within the country, the Caribbean region and in regions with similar climates (Table 9).
191. The multitude of parallel initiatives, targeting different aspects of clean energy in buildings, highlights both the importance of, and significant opportunity for, improved energy use in buildings. This is reinforced by the addition of more recent projects (Table 10) to continue the journey towards more sustainable buildings.
192. Very limited evidence was found to suggest that opportunities for collaboration, information sharing and leveraging of synergies and networks were actively pursued. There was some deliberate collaboration with the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) for training related to cost benefit analyses and financial modelling for EE and RE projects. Examples of missed opportunities include the duplication in development of a regional and national building codes as well as the limited information sharing between the EE in Buildings in East Africa (EEBA) project⁶⁰ and that of the Caribbean.
193. As will be seen in *Section D, Effectiveness*, delays in the project implementation meant that some activities, initially planned for the Promoting EE and RE in Buildings in Jamaica project, were implemented by other organisation under one of the parallel initiatives listed below.

⁵⁸ <https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Jamaica%20First/Updated%20NDC%20Jamaica%20-%20ICTU%20Guidance.pdf>.

⁵⁹ <https://jis.gov.jm/jamaica-to-participate-in-climate-change-conference-in-scotland/>.

⁶⁰ Only a handful of publications from the EEBA were used and adapted by the Jamaica project and none were directly shared on the Buildbetter Jamaica website.

Table 9. Complementary initiatives

Initiative and timeframe / term	Funder and implementers	Description of scope and linkages to PEEREBJ ⁶¹ project
<p>REETA – Renewable Energy and Energy Efficiency Technical Assistance (REETA) 2012 – 2016</p>	<p>Commissioned by: German Federal Ministry for Economic Cooperation and Development (BMZ) through the GIZ Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ). Country: All CARICOM member states and the Dominican Republic Lead executing agency: Caribbean Community and Common Market (CARICOM) Secretariat</p>	<p>The focus of the Renewable Energy and Energy Efficiency Technical Assistance (REETA) project was on developing a regional energy strategy, creating regional expertise and promoting networks between actors. REETA, in cooperation with other donors, helped to integrate various renewable energy and energy efficiency training courses into programmes offered by university and technical schools. This aligned with and could have served as a vehicle or platform for Component 4 (originally 5) of the PEEREBJ project that focused on embedding knowledge management, information sharing, learning, and collaboration network among key national stakeholders and introducing it within the region in the interest of sustainability, replicability and continued collaboration.</p>
<p>Energy for Sustainable Development in Caribbean Buildings, Regional Project (GEF ID 4171) 2013 - 2019⁶²</p>	<p>Funded by: GEF Least Developed Countries Fund Implementing Agency: UNEP Lead Executing Agency: Caribbean Community Climate Change Centre (CCCCC) In collaboration with the CARICOM Regional Organisation for Standards and Quality (CROSQ)</p>	<p>The project set out to reduce greenhouse gas emissions and promote energy efficient technologies and practices in appliances and buildings in five Caribbean countries (Antigua and Barbuda, Belize, Grenada, St Lucia and St Vincent and the Grenadines). The project aimed to develop and support the adoption and application of the Regional Energy Efficiency Building Code (REEBC), and Minimum Energy Performance Standards (MEPS) and Energy Standards and Labelling (ES&L) for Electrical Appliances in the five countries. This created opportunities for information sharing, collaboration, and expanding the PEEREBJ project influence into the region. Learnings from the knowledge creation and demonstration components (Components 1 and 2) of the PEEREBJ could have provided valuable input to the listed countries and the regional building code. This also created a further opportunity for building networks and knowledge sharing (Component 4).</p>
<p>Energy, Efficiency and Conservation Programme (EECP) 2011 – April 2017 (transferred) – ongoing</p>	<p>Loan: US\$20-million technical cooperation / loan agreement with the Inter-American Development Bank</p>	<p>The EECP targets government-owned buildings and included several components such as institutional strengthening; investments in energy efficiency and conservation; demand side</p>

⁶¹ Promoting Energy Efficiency and Renewable Energy in Buildings in Jamaica (PEEREBJ)

⁶² Closure is not confirmed. Last available document on GEF website states December 2019 as planned completion date. <https://www.thegef.org/projects-operations/projects/4171>

Initiative and timeframe / term	Funder and implementers	Description of scope and linkages to PEEREBJ ⁶¹ project
	<p>Implementing Agency: Jamaica Ministry of Science, Energy and Technology</p>	<p>management; and energy efficiency/conservation education and awareness.</p> <p>In April 2017 the programme execution was transferred to the Petroleum Corporation of Jamaica.</p> <p>By 2020, 46 government facilities had received energy efficient retrofits and interventions⁶³.</p> <p>This EECF project provided a vehicle where learnings, proven technologies, and solutions from the PEEREBJ could inform the roll out and implementation across government buildings.</p>
<p>Promoting Energy Efficiency in Buildings in East Africa (EEBEA) 2011 – 2018</p>	<p>Funded by: GEF Implementing Agency: UNEP Lead Executing Agency: UN-Habitat</p>	<p>The project aimed to mainstream energy efficiency measures into housing policies, building codes, municipal bylaws and building practices in East Africa. The project produced invaluable design documentation, technical notes and videos relevant to tropical and sub-tropical climates.</p> <p>Opportunities existed for information and resource sharing between the two projects.</p>
<p>Jamaica Energy Security and Efficiency Enhancement Project 2011 – 31 October 2017</p>	<p>Loan: USD 15 million from the World Bank / International Bank for Reconstruction and Development (IBRD) Led by: Ministry of Science, Energy, and Technology</p>	<p>The project targeted improved energy efficiency and security of Jamaica through the implementation of Jamaica’s National Energy Policy. The contributions most relevant to the Promoting EE and RE in buildings in Jamaica project, included:</p> <p>(i) Expanded and refurbished energy efficiency testing chambers aided compliance with the country’s new energy efficiency standards.</p> <p>(ii) Providing financing for small-medium enterprises to implement energy efficiency/ renewable energy projects. Through the Development Bank of Jamaica (DBJ) line-of-credit, 55 loans, totaling US\$5.38 million, were disbursed for private sector energy efficiency projects.</p> <p>Activities under this project coincided with planned activities under the PEEREBJ, notably the strengthening of test facilities for RE and EE equipment (Component 3). Opportunities for collaboration also existed for knowledge support to have been made available to the small businesses taking up the available finance (Component 4).</p>

⁶³ https://www.mset.gov.jm/wp-content/uploads/2020/06/MSETSectoral_2020.pdf and <https://www.cvmtv.com/news/govt-entities-save-over-376-million-in-electricity-costs/>

Table 10. Recently introduced complementary initiatives

Initiative and timeframe / term	Funder and implementers	Description of scope and linkages to PEEREBJ
<p>Regional Energy Efficiency Building Code (REEBC) 2017 – 2018</p>	<p>Funded by: Unknown Led by: CARICOM Regional Organisation for Standards & Quality (CROSQ), in collaboration with Regional Project Team (RPT) representing nine⁶⁴ Caribbean Community Countries, including Jamaica</p>	<p>The development of a Regional Energy Efficiency Building Code (REEBC) was launched in Jamaica at the end of March 2017. Included (i) a review of the minimum energy performance standards for buildings⁶⁵ and (ii) a review the International Energy Conservation Code (IECC) to adapt it, where necessary, and present for acceptance and adoption by member states as a Regional Energy Efficiency Building Code. The Code was passed by the region’s ministers at the CARICOM Council for Trade and Economic Development (COTED) in 2018. This presented an opportunity for collaboration, knowledge sharing and establishing strong regional networks.</p>
<p>The Technical Assistance Programme for Sustainable Energy in the Caribbean (TAPSEC) activated its resources in 2020.</p>	<p>Funded by: European Union and the German Federal Ministry of Economic Cooperation and Development. Implemented by: GIZ</p>	<p>TAPSEC supports the region’s transition to a low-carbon, sustainable and climate-compatible development pathway by increasing and improving access to modern, affordable and sustainable energy services. It focuses on policy and regulations, information and capacity development and finance. This presented an opportunity for knowledge sharing and establishing strong regional networks (Component 4) and potentially for informing policy and regulation beyond the National borders (Component 3).</p>
<p>GoJ Energy Management and Efficiency Programme (November 2017–November 2023)⁶⁶</p>	<p>Funded by: Funding provided by the European Investment Bank, Inter-American Development Bank (IDB) and the Japan International Cooperation Agency. Implemented by: Ministry of Science, Energy and Technology (MSET)</p>	<p>The programme seeks to promote energy efficiency in government facilities and fuel conservation in road transportation by reducing fuel imports. As for the EECF (previous table), this initiative provided an opportunity for rolling out advanced EE and RE measures informed by the learnings of the PEEREBJ project, advancing the ambition for a national retrofit (Component 3).</p>
<p>Deployment of Renewable Energy and Improvement of Energy Efficiency in the Public Sector project (2016 –June 2021)</p>	<p>Funded by: GEF (USD 1,254,687 grant) Implemented by: United Nations Development Programme (UNDP) Multi-Country Office in Jamaica in</p>	<p>The project sought to advance a low-carbon development path and reduce Jamaica’s public-sector energy bill through the introduction of renewable</p>

⁶⁴ Antigua and Barbuda, Barbados, The Bahamas, Belize, Guyana, Haiti, Jamaica, St Lucia, and Trinidad and Tobago

⁶⁵ Following a recommendation from a report, prepared by Solar Dynamics, that considered the development of Minimum Energy Performance Standard (MEPS) for public and commercial buildings in Caricom countries.
https://www.jamaicaobserver.com/news/Jamaica-to-host-energy-efficiency-building-code-project-launch_93261

⁶⁶ Details are outlined in the 2022/2023 Estimates of Expenditure, tabled in the House of Representatives by Minister of Finance and the Public Service, Dr. the Hon. Nigel Clarke, on February 10; reported by <https://jis.gov.jm/energy-management-and-efficiency-programme-receives-1-16-billion/>

Initiative and timeframe / term	Funder and implementers	Description of scope and linkages to PEEREBJ
	collaboration with key stakeholders, including the Ministry of Science, Energy and Technology, Ministry of Health and Wellness and the Development Bank of Jamaica.	energy and improvement in energy efficiency in the health sector. Six public health facilities benefitted from the installation of solar energy and energy efficiency systems. These are National Chest Hospital, Sir John Golding Rehabilitation Centre and Bellevue Hospital in St Andrew; Black River Hospital, St Elizabeth; May Pen Hospital, Clarendon; and the Savanna-la-Mar Public General Hospital in Westmoreland. As above, this initiative provided an opportunity for rolling out advanced EE and RE measures informed by the learnings of the PEEREBJ project, advancing the ambition for a national retrofit (Component 3).

194. Rating for Complementarity with existing interventions is **Moderately Satisfactory**.

Rating for Strategic Relevance: Highly Satisfactory

B. Quality of Project Design

195. The project combines the demonstration of technologies and solutions in both greenfield and brownfield buildings with advocacy and engagement of both the private and public sector to create awareness and encourage adoption into policy and practice.
196. The project was (and remains) highly relevant and strategically timed to encourage early adoption of advanced energy efficiency and green building practices, influence planned revisions to building codes and standards and leverage the technology advances and downward price trends of clean energy solutions in the preceding decade.
197. Conceptually the demonstration of a zero-net energy building with strong participation from key roleplayers in (i) informing the project development, (ii) providing oversight, and (iii) disseminating learnings into their various spheres of influence, including the Caribbean region, is tactically sound.
198. Stating outputs and outcomes in terms of impact or reach could have better captured the effectiveness of this approach. However, as it was formulated at design, the project logic or results framework muddled activities, outputs and outcome statements. The original statements are not in line with the UNEP Glossary of results definitions. Output and outcome statements did not clarify the intended beneficiaries and indicators did not clearly demonstrate the project contribution i.e. they were not Specific, Measurable, Achievable, Relevant, Time-bound (SMART).
199. There were both advantages and disadvantages to having the UWI as Executing Agency and hosting the PMU. This location embedded the ZNEB as a learning tool for new generations of building professionals. Stakeholder feedback also suggested that, despite the extended delays, the UWI provided a more efficient implementation environment compared to a government environment. The disadvantage of this location is that it is not close to the government actors undertaking policy development. This distance / disconnect from government proved to be a big challenge for the project when the initial government support did not materialise as planned. The project was not able to effectively overcome this challenge during implementation.

200. There are opposing views as to whether the UWI was best placed as EA or whether it would have been better placed in government. An option may have been to contract with the government as EA while hosting the PMU within the UWI. There is however no evidence to give clear direction as to the preferred option and such an option would have required better consideration and consultation project during design.
201. These design elements (paragraph 197) and PMU location would have created excellent conditions for sustainability of the interventions and outcomes.
202. The project components have effectively been structured sequentially, with subsequent components flowing from and building on the foundational steps. Technical design information developed under Component 1 would inform the design and development of the zero net energy building and the retrofit of Components 2 and 3 respectively. The combined learnings and proven impact of these first three components would effectively inform the review and enhancement of the policy and regulatory framework and enabling environment (Component 4) and provide content and supporting evidence to be used for the dissemination of information (Component 5).
203. However, while conceptually or logically sound, a sequential approach i.e. basing the implementation of any component on the outputs of a preceding one(s), carries significant risk when the delivery of one or more of the early components are delayed.
204. In addition to the investment aspect (demonstration projects), the project scope is ambitious, including: (i) revisions to the policy and regulatory environment for new and existing buildings, (ii) development and implementation of a national quality supervision system and strengthening of testing facilities, (iii) assessment, designation and contracting (framework agreements) of test facilities, and (iv) development of suitable financing mechanisms. While the budget allocation is significant, the combined scope seems too nebulous and expansive with the description and accompanying workplan provided in the Project Document providing limited information of what the scope of each Component entails.
205. Most notably, the scope of Component 3 (Support for the adoption of EE and clean energy policy, standards and codes with evidence-based inputs and quality assurance frameworks and infrastructure) were very ambitious for the limited budget (USD 236,000) and small project team. Each of these interventions could have been described as a standalone project with double the indicated budget.
206. The documented project design falls short on (i) in the articulation of the results framework (outputs, outcomes, impacts) and project logic; (ii) consistency in the documentation including the description of components, budget, roles, governance structures, workplan, monitoring plan and costing; (iii) how it visualised co-financing; and (iv) acknowledging potential impacts (positive or negative) on human rights, gender or other minority groups⁶⁷. In relation to these considerations, the analysis appears too narrowly focus on the physical construction and renovation, rather than the broader targeted contribution by the project.
207. This is echoed by the very detailed description provided of the zero-net energy building design elements and interventions compared to the limited detail captured for the outputs related to the integration into policy, development of finance mechanisms, national quality supervision system, and dissemination of the learnings.
208. The general impression is that the project was designed with a singular focus i.e. development of the demonstration building, with detailed consideration given to the scope of this aspect. In comparison, the consideration given (or documented) for other

⁶⁷ This was not a GEF or UNEP requirement at the time of the project design.

components at design stage were limited. This may (very likely) result in implementation bias and therefore present a hurdle for the contribution from the demonstration projects to be effectively leveraged for maximum impact.

209. Several of the comments from the GEFSEC, and Council (Annex A in the CEO Endorsement Request) appear to echo this concern.
210. The risks that could arise from not providing clear implementation direction for all components could largely have been mitigated by (i) the continuity of having the design team directly involved in the implementation and (ii) the established networks and relationships of this team within various planning and decision-making structures in the country. The evaluation found that these risks were not effectively mitigated.
211. As discussed in Sections III, C and D, the anticipated role / function of the Governance structures (PAC and PSC) as ‘ambassadors’ of the project and the personal involvement of the Minister of Housing as project sponsor were unrealistic, problematic or not properly constituted. Why these fora were expected to be feasible at design stage could not be verified from the data or interviews⁶⁸.
212. Project design challenges further relate to the ambitious delivery timelines without any acknowledgement of, or consideration to, the risks associated with slow and cumbersome bureaucratic processes to progress key delivery milestones – noting again the sequential approach.
213. The project document did not reflect any of the parallel initiatives listed in the preceding *Section A: Strategic Relevance, Complementarity with other initiatives*. In this, it did not facilitate collaboration, information sharing or leveraging of synergies. It likely also contributed to several of the outputs planned for the project being implemented by parallel initiatives.
214. Critical annexes to the project document were not consistent with the final version of the project design. Most notably, this included the workplan and monitoring and evaluation plan. These two plans are essential to support the project contribution against the results framework. Coupled with the limited descriptions of components captured in the Project Document (except for Component 3, Net Zero Energy demonstration building), this proved severely problematic for implementation.
215. The amended scoring of the project design quality is included as Annex V to this report.
216. The overall quality of the Promoting Energy Efficiency and Renewable Energy in Buildings in Jamaica project design is Moderately Satisfactory (total score=3.64).

Rating for Project Design: Moderately Satisfactory

C. Nature of the External Context

217. The project document did not note or anticipate any concerns related to external context at the time of design. The evaluation however noted that multiple political and economic developments impacted on project implementation.
218. **Devaluation of the Jamaican Dollar** by 66% between 2011 (project design) and 2020 (project completion). With project cash funding and the original budget in US Dollars,

⁶⁸ At design, both the PAC and PSC were expected to exist with very broad representation, including personal attendance by the Minister of Housing. The PAC was expected to meet monthly. These forums were expected to play a critical role in the dissemination of learnings and integration into the policy and implementation environment. The ProDoc suggested that stakeholder participation had largely been confirmed prior to implementation. It is not clear why this was thought to be the case nor why there was an expectation for such broad representation and active participation at the time of design.

devaluation of the local currency effectively increased the value of project funding in local terms. Approximately 60% of the budget was earmarked for personnel costs, training and workshops, and various services that were locally procured. While currency devaluation had a direct impact on inflation⁶⁹, the inflation did not outpace the devaluation against the USD. As a consequence, the available funding had a higher Jamaican dollar value than initially budgeted, which contributed to the underspending of the project.

219. **Multiple Government staff changeovers** eroded the initial commitment of support for the project and caused loss of continuity in the established interfaces and relationships with government departments. General elections were held in 2016, consuming significant political attention and resulting in a change of government.
220. Significantly, in July 2018, the Minister of Science, Energy and Technology was removed from Cabinet because of corruption charges. The Minister strongly supported the ZNEB. He had attended the ground-breaking ceremony for the ZNEB in 2016 and the opening of the building in October 2017⁷⁰. He had also announced that the Jamaican Government was aiming to have all buildings be ZNEB by 2050⁷¹. Consequently, the project lost its main, high-level government sponsor at a critical stage during implementation.
221. **Oil price fluctuations.** Jamaica relies heavily on oil imports for electricity generation and its economy is vulnerable to increases in the oil price. At the time of project design (2011 – 2013), Brent crude oil was trading at around USD 111 per barrel. During project implementation, the price fell to USD 43 per barrel (2015) and generally traded 40 – 55% below the price at design. The low cost of energy negatively impacted the political drive and commitment to energy efficiency.

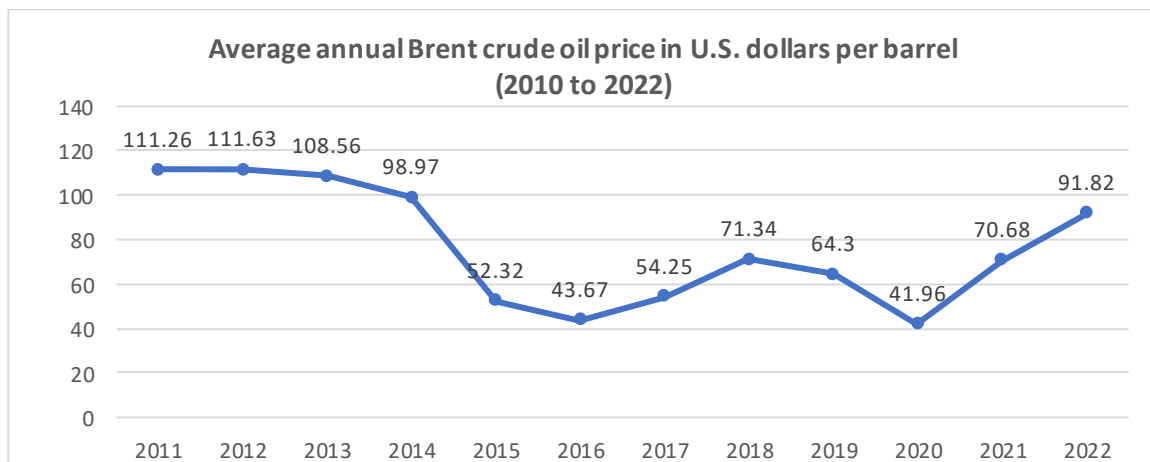


Figure 4: Average annual Brent Crude oil price from 2010 to 2022⁷²

222. **COVID-19 pandemic.** The novel coronavirus (COVID-19) was declared a global pandemic on 11 March 2020 by the World Health Organisation (WHO). This resulted in lockdown measures being imposed internationally, including Jamaica, restricting in person gatherings of people also in academic settings. While this coincided with the last few days of project implementation, it significantly impacted building use and therefore performance monitoring for both demonstration buildings. At the time of writing,

⁶⁹ Inflation Rate in Jamaica averaged 8.49 percent from 2002 until 2022. Source: <https://tradingeconomics.com/jamaica/inflation-cpi>

⁷⁰ Confirmed by multiple newspaper articles

⁷¹ Source: <https://nationwideradiojm.com/zero-net-energy-buildings-by-2050/>

⁷² <https://www.statista.com/statistics/262860/uk-brent-crude-oil-price-changes-since-1976/>

restrictions remain in place in the Jamaica⁷³ with no clear indication of when facilities will revert to full occupancy.

223. Although individually, these adverse conditions would not be considered severe, the coincidence and sequencing of events contributed to significant and repeated disruptions throughout the implementation timeframe. Most significantly, it appeared to have dissolved the initial political will and support for the project.

Rating for Nature of the external context: Moderately Unfavourable

D. Effectiveness

Availability of Outputs

224. Given the budget, the project produced a relatively small number of outputs with the bulk of the effort and resources invested in the high-impact demonstration projects (62% of the budget).

225. Of the 14 outputs, 10 are considered achieved and 3 are partially achieved.

226. Outputs for each component are discussed in subsequent tables.

Component 1. Green building design data relevant to (sub-) tropical climates

227. Table 11 provides an overview of the outputs anticipated for Component 1 as redefined in the reconstructed TOC at Evaluation. It also provides a status indication of the availability of the output with evidence or examples supporting the status indicator.

228. It should be evident from the below that decision-makers have increased access to a knowledge base on green building technologies and solutions for the local context and climate.

Table 11. Outputs from Component 1

Expected project Outputs (as restated for reconstructed TOC)	Status	Evidence / examples of Outputs
1.1 Building professionals, property owners, developers and policy-makers have access to climatically relevant designs & energy efficient technological building solutions and practices to inform the development of building standards and codes.	Achieved	<p>Various publications, both developed by the project as well as publications developed by other projects, shared through the project knowledge platform. these include:</p> <ul style="list-style-type: none"> - Multiple brochures and/or sign boards, each highlighting specific opportunities for energy savings including efficient lighting, reduced water use, building orientation, and smart metering. - UWI NZEB project. 2018. Caribbean Guide for Energy Efficient Building Design. <p>Not developed by the project, but drawing on input from the project or contributing to the targeted output:</p> <ul style="list-style-type: none"> - Ministry of Science, Energy & Technology developed a manual on energy conservation in buildings, titled: <i>Energy Efficiency & Conservation, Standards Guide for the Public</i>

⁷³ <https://ig.ft.com/coronavirus-lockdowns/>

Expected project Outputs (as restated for reconstructed TOC)	Status	Evidence / examples of Outputs
		<p>Sector⁷⁴. The NZEB was included as one of the case studies showcased in the manual. Dr Brown, a PSC member, noted at the 2017 PSC meeting that she had provided input into the preparation of the manual and shared the ZNEB information for inclusion.</p> <ul style="list-style-type: none"> - An IDB funded report, distributed by the project and shared on the Build Better Jamaica (buildbetterja.com) website, also reviewed the status of climate resilient policy provisions and measures as well as opportunities for improvement.
<p>1.2 Building professionals, property owners, developers and policy-makers have access to locally relevant energy demand patterns and associated opportunities for energy savings in buildings</p>	<p>Achieved</p>	<p>In addition to the publications listed for Output 1.1. At project completion in 2020, information and learnings were consolidated into a publication that identifies different opportunities (technologies and solutions) for clean energy and efficiency in commercial and residential buildings in the country. It provides an indication of the energy savings that could be achieved for each technology/solution. The publication notes that the information is based on the findings of energy audits in more than 80 residential and commercial buildings within the country and is therefore particular to the <u>specific climate conditions</u>. The publication provides a high-level indication of the energy use in buildings in these two sectors, but <u>does not provide any detail</u> (e.g. a load profile) of the <u>demand patterns</u>, typical <u>usage per end-use</u> and also doesn't link opportunities for savings to time of day or specific end-uses.</p> <ul style="list-style-type: none"> - Dennis, M. 2020. <i>Energy Demand Assessment for Jamaica's Commercial and Residential Sector</i>, March 2020.
<p>1.3 Building professionals, property owners, developers and policy-makers have access to generic design elements for highly innovative core building systems, components, and solutions relevant to tropical / subtropical climates.</p>	<p>Achieved</p>	<p>In addition to the documentation already listed above, the project also produced in 2019 a final design report for the ZNEB capturing detail drawings of all design elements: architectural, engineering, electrical, etc. and a comprehensive and very useful report regarding retrofit opportunities in the NHT building in 2017:</p> <ul style="list-style-type: none"> - UWI ISD. 2019. <i>Climatically relevant designs and Energy Efficient technological building solutions</i>, (ZNEB Final Design Report documenting the ZNEB prototype building complete with detail architectural (refer to Figure 5), civil, structural, mechanical, electrical and plumbing drawings). - UWI ISD. 2017. <i>National Housing Trust Energy Audit</i>, January 2017.
<p>1.4 Policymakers and technical experts have access to recommended specifications and provisions for inclusion into revised building codes and standards to achieve higher EE</p>	<p>Partial</p>	<p>Detailed ZNEB design document was published. NHT audit report was published. Generic recommendations for passive design (orientation, shading, etc.) and EE technologies</p>

⁷⁴ <https://www.iea.org/policies/6808-energy-efficiency-and-conservation-standards-guide-for-the-public-sector>; and presentation overview available at the Buildbetter Jamaica website: <https://buildbetterja.com/wp-content/uploads/2019/12/2.-Dr.-Noel-Brown-Energy-Efficiency-and-Conservation-Standards-Nov-2019.pdf>

Expected project Outputs (as restated for reconstructed TOC)	Status	Evidence / examples of Outputs
and increased use of RE in buildings in tropical and sub-tropical countries at affordable cost.		<p>(lighting, water use, etc.) were published in 21018 in the <i>Caribbean Guide for Efficient Building Design</i>. These outputs from the project were complemented by the work done for the CARICOM regional energy efficiency building code. The REEBC includes requirements for building envelope, solar heat gain coefficients, cool roofs, air exchange rates. Recommendations were substantiated by case studies showing costs of interventions and associated energy, cost and emissions savings as well as payback periods. Similar outputs would be expected for the ZNEB and NHT demonstration buildings once performance tracking resumes.</p>
<p>1.5 Building professionals and policymakers have access to a selection of cost/benefit methodologies, cost benefit analyses for various technologies and solutions, and financial and economic evaluation models to support planning and design.</p>	Achieved	<p>Cost benefit information included in training workshops, notably Energy Retrofit Workshop – November 26th, 2019:</p> <ul style="list-style-type: none"> - Development Bank of Jamaica presentation: the Economics & Benefits of Energy Audits for Retrofitting Buildings. - Advantages of using raised access floors in modern offices presented by Mr Jennings (Max) Gordon. - Expandable Polystyrene Foam for insulation and cladding on both new buildings and retrofits, presented by Mr Keith Edwards of Free Foam Factory. - Training on Dynamic Investment Grade Calculation, hosted by the project, but funded by the GIZ under the REETA project. The training course, presented over 3 days, covered investment grade calculation, forecasting and analysis of EE and RE projects. <p>Generic technology or solution specific cost benefit analyses were found in different places on the website, but unfortunately these had not been consolidated into a library of technology / solutions showing cost benefit analyses (CBAs) or cost benefit methodologies.</p>



Figure 5: Design drawing for the Net-Zero Energy Building

Component 2. Demonstrating economic and environmental benefits of advanced EE and RE in new and existing buildings in (sub-) tropical climates

229. Table 12 provides an overview of the outputs anticipated and delivered for Component 2 as redefined in the reconstructed TOC at Evaluation.


230. The two demonstration projects have undoubtedly contributed to decision-makers having access to excellent demonstration facility(ies). Implementation delays mean proven or quantifiable benefits and performance benchmarks are pending – but possible.

Table 12. Outputs from Component 2

Expected project Outputs (as restated for reconstructed TOC)	Status	Evidence / examples of Outputs
2.1 Building professionals and policymakers have access to demonstrated and quantifiable economic and environmental benefits of retrofitting EE and RE technologies and solutions in <u>new and existing buildings</u> in (sub-) tropical climates.	Achieved	<p>The ZNEB has been documented in a video (available at: https://youtu.be/LEt2zQSDJNl). The existence and quality of this demonstration facility building were also confirmed through photo evidence, media reports and stakeholder interviews. The NHT building retrofit was only completed early in 2022, but progress has been documented, since the initial audit findings, in various media reports, in workshop presentations and confirmed by stakeholder interviews. Refer Box 1 and Box 2 for key characteristics.</p> <p>Implementation of both demonstration projects were delayed. Consequently, the availability of demonstrated and quantifiable benefits has also been delayed. Preliminary findings of benefits are however available for both the retrofit and ZNEB in form of:</p> <ul style="list-style-type: none"> - UWI ISD. 2017. <i>National Housing Trust Energy Audit</i>, January 2017. Recommended interventions to reduce energy use by 46%. - MSET and JPS. 2017. <i>Energy Efficiency & Conservation, Standards Guide for the Public Sector</i>. Case study reported energy use per square foot and energy production per annum. <p>Implementation of the NHT retrofit was reportedly completed early in 2022. Monitoring and</p>

Expected project Outputs (as restated for reconstructed TOC)	Status	Evidence / examples of Outputs
		performance tracking for both buildings are pending full operation, post COVID-19.
2.2 Building professionals and policymakers have access to a portfolio of tested EE and RE technologies and solutions with proven performance record and benchmarks in new and existing buildings.	Partial	<p>Earlier publications (Component 1) have been supplemented with physical demonstration facilities.</p> <p>Currently performance information is anecdotal. Proven performance record and benchmarks are pending full occupation and monitoring period (post COVID-19).</p> <ul style="list-style-type: none"> - Preliminary data shared for ZNEB: 19kWh/sqft and 45 MWh energy produced per annum.
2.3. Technical experts and policymakers have access to tested recommendations for improved energy efficiency and green building standards, codes and practices for <u>new and existing buildings</u> .	No	<p>Pending measurement data for different interventions and solutions.</p> <p>A maintenance and operations schedule has been prepared by the project, indicating all regular maintenance activities required for the optimal, continued operation of the ZNEB.</p> <p>The UWI has committed to resume performance monitoring and provide inputs into policy development and future revisions of the building code.</p>
2.4. Educational demonstration facility located within an academic institution is available to students in the built environment to facilitate experiential learning and encourage / inspire innovation among new generation of building professionals.	Achieved	<p>Successfully completed, high quality, locally relevant ZNEB demonstration building located at UWI.</p> <p>The ZNEB has been formally handed over, and accepted by, the University of the West Indies as per a letter from the Vice-Chancellor, Hilary Beckles, dated 26 November 2019. The UWI has agreed that the Mona Campus will take responsibility for the staffing operation, maintenance and public relation of the NZEB with effect from 1 August 2019.</p> <p>The UWI has indicated the intention for the facility to host a Science Academy, targeted learners across all levels of education (primary to secondary).</p>

Box 1: Key characteristics of the NHT retrofit



Recommendations for Retrofitting of Existing Buildings
to achieve significant increase in Energy Efficiency.

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Website: www.buildbetterja.com

[f](#) [t](#) [i](#)

The NHT headquarter building audit identified significant opportunities for energy savings. The annual energy consumption by the building was 2,273,969.00 kWh of electricity. This consumption level is 34.2% higher than the benchmark used by the energy auditors. Areas of excess energy use (and therefore potential energy savings) were identified to lie in (i) the HVAC System, Mini Split AC Units and the Air Handling Units (45%), (ii) Central UPS and desktop computers (20%), (iii) Lighting to internal and external area (18%), and (iv) Plug Loads (11%).

The following interventions were recommended for the retrofit:

1. Installation of new air-cooled chilled water system (14% energy reduction)
2. Installation of variable frequency drive controls and improved electrical motor efficiency (further energy reduction of 6%).
3. Improved lighting efficiency
4. Reduced solar heat gains on roofs
5. Occupancy sensors in individual offices
6. PV system
7. Window film retrofit
8. Metering of major consuming components

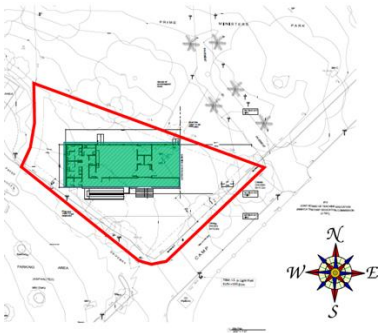
Items 1 and 2 were incorporated under the HVAC retrofit already planned for the building. Items 3 – 8 promising a further 46% energy savings. The NHT opted to proceed with all these recommended EE upgrades and the addition of the Solar PV system.

Box 2: Key characteristics of the ZNEB

Jamaica's first Net Zero building



Building façade (showing shading, treatment of openings, window-to-wall ratio, foliage, light coloured exterior)



ZNEB footprint (showing W-E orientation, narrow floorplan, services buffer zone on West wall)

The ZNEB combines passive design elements with EE and RE solutions – ranging from low-tech to advanced or sophisticated – to demonstrate that high standards of energy efficiency and productivity are feasible in tropical and sub-tropical regions. It demonstrates the following critical design elements, many of which have low or no additional costs associated:

1. **Site analysis.** Analysis of the site context, topography and climatic data.
2. **Building footprint.** Open space maintained around the building.
3. **Building orientation.** Orientating along the West-East axis to minimize direct solar heat gain.
4. **Building form / shape.** Keeping the building narrow in hot, humid climates to maximise natural light, natural ventilation and minimize heat gain.
5. **Allocation of spaces within the building.** Buffering heat facing external walls with services (see services on Western side of floor plan).
6. **Openings.** Window-to-wall ratio kept within 40% on all 4 sides of the building and windows placed on North and South walls. Glazing kept to the minimum, unless when using special treated glass.
7. **Daylighting.** Window areas at least 10% of the floor area and designed to let in natural light (i.e. by using a narrow floor plan and a clerestory and/or light shelves to direct light into the interior).
8. **Solar protection.** The use of shading elements or devices e.g. roof or floor overhangs, external shades, to protect the interior from direct, harsh sun.
9. **Natural ventilation.** All walkways, kitchen and bathrooms are naturally ventilated and the building combine insulation and openings to create natural flow of air and ventilation.
10. **Cooling.** It incorporates passive cooling systems where relevant, excellent insulation where air conditioners are used to limit heat gains and reduce energy demand and installed a Variable Refrigerant Volume air conditioning system as a more efficient AC option - the inverter compressors are EE, each space can be individually controlled, and system is easily maintained.
11. **Building envelope and materials.** Incorporated local building material with low carbon footprint where available and material with low heat transmittance properties. The insulation value (R-value) of all structural walls is high).
12. **External finishes.** Light coloured surfaces or “cool roofs” to reflect excess solar radiation.
13. **Renewable energy.** After the building energy demand was confined by applying the above measures, appropriate RE technology (solar PV) was introduced to supply the building energy needs.
14. **Water conservation and efficiency.** the building uses water harvesting and low flow taps and toilets to contain water use and wastage. It also benefits energy savings as water heating and water supply requires energy, which means lower usage reduces energy demand.
15. **Landscaping.** Limited paved areas and maximum greenery.
16. **EE appliances and demand management.** The building incorporates an EE lighting system and lamps (all lighting is LED), EE air conditioning solution, smart metering, lighting control system based on both daylighting and occupancy.
17. **Sustainability.** Additional measures were also introduced to strengthen resilience against storms and adverse weather (drainage) and address other sustainability objectives (waste management)

231. The ZNEB has been formally handed over, and accepted by, the University of the West Indies as per a letter from the Vice-Chancellor, Hilary Beckles, dated 26 November 2019. The UWI has agreed that the Mona Campus will take responsibility for the “staffing operation, maintenance and public relation of the NZEB” with effect from 1 August 2019.
232. A maintenance and operations schedule has been prepared by the project, indicating all regular maintenance activities required for the optimal operation of the ZNEB.

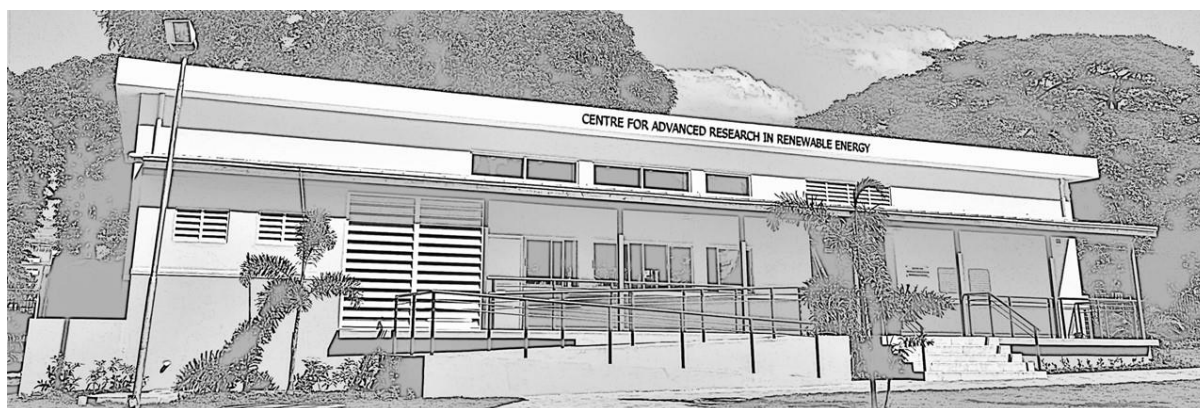


Figure 6: Front façade of the ZNEB, adapted from the cover page photo

Component 3. Support for the adoption of EE and clean energy policy, standards and codes with evidence-based inputs and quality assurance frameworks and infrastructure

233. Table 13 provides an overview of the outputs anticipated and delivered for Component 3 as redefined in the reconstructed TOC at Evaluation.
234. The three outputs were achieved to varying degrees. Indeed, with poorly defined indicators it is difficult to say they were not achieved. Most notably, building codes are in place with a generic EEC component, but they don’t reflect any learnings from the project. Besides, all three were driven by parallel initiatives with some input from the project.
235. As discussed in *Section B: Quality of Project Design*, the budget allocation for this component did not correspond with the anticipated outputs, unless significant co-financing were committed.
236. Because the project was not timeously aware of the parallel initiatives (refer earlier discussion regarding the functioning of the PSC, Section III, D), the project could not fully exploit opportunities for collaboration. While duplication was avoided, the project resources were also not efficiently reallocated. This failure is discussed in *Section F. Efficiency*.
237. Delayed outputs from the demonstration projects also meant that results could not be optimally integrated into building codes.
238. Opportunities for future enhancement of all three outputs, using project results and infrastructure, remains. These are noted below for each of the outputs.

Table 13. Outputs from Component 3

Expected project Outputs (as restated for reconstructed TOC)	Status	Evidence / examples of Outputs
3.1. The Minister of Housing and other participating policymakers participated in formulating preferred/recommended standards, and building codes for achieving	Achieved	- Jamaica’s Building Act was promulgated in 2018.

Expected project Outputs (as restated for reconstructed TOC)	Status	Evidence / examples of Outputs
higher EE in buildings at reasonable cost, specific to the conditions in tropical and sub-tropical countries.		<ul style="list-style-type: none"> - National Building Code for Jamaica with energy efficiency / conservation component adopted and in effect from January 2019. - Regional Energy Efficiency Building Code adopted 2018. The regional code does not supersede the national code, but provides impetus for further enhancements and cross-pollination between the two codes moving forward. <p>Both the national and regional codes draw on the international building code with some locally relevant parameters captured in accompanying amendment documents. Significant opportunity exists for further enhancements and tailoring to reflect local experience and conditions.</p> <p>The revision of the building codes and inclusion of EE into the codes was confirmed by stakeholders during interviews as well as survey responses. Codes were not available for review without purchase.</p>
3.2. Policymakers are cognisant of the opportunities identified in existing policy, regulations & practices for inclusion of EE and clean energy measures in building retrofits.	Achieved	<p>The project conducted a detail review and assessment of renewable energy and environmental policies in Jamaica that impact the development of Net Zero Energy Buildings (NZEB) and building retrofits. It identifies gaps in existing policy and suggest priority areas for amendments to the policy environment to progress towards NZEB. This is supported by an action plan to establish the necessary policy context consisting of recommended actions, timeframes and roles and responsibilities.</p> <p>A series of workshops were held in the development of this work (23 March and 6 June 2017), sharing information and obtaining inputs from stakeholders.</p> <p>Findings are published in a report that was developed in consultation⁷⁵ with government, non-government organisations, civil society, and industry stakeholders:</p> <ul style="list-style-type: none"> - Bernard, K. 2018. <i>National policy and plan for NZEB development and retrofitting of all suitable existing buildings in Jamaica.</i> <p>The publication was handed over to the Minister of Science, Energy and Technology on Friday February 7, 2020 (photo evidence of the event and a project Instagram post: https://www.instagram.com/p/CAOFsreheD1/).</p> <p>The project also presented two Retro-Fit workshops (30 April 2019 and 26 November 2019), sharing guidelines for retrofitting of buildings.</p>
3.3. Technology providers and regulatory body(ies) have the benefit of a national quality supervision system with fully operational (designated?) testing facilities to safeguard the newly created market for clean energy technologies.	Achieved	Testing facilities for energy efficient appliances including ventilation and air conditioning, were upgraded and expanded as part of a parallel, World Bank funded project (refer earlier complementary initiatives documented under Strategic relevance).

⁷⁵ Consultations consisted of a series of stakeholder consultations and the two workshops hosted by the project.

Expected project Outputs (as restated for reconstructed TOC)	Status	Evidence / examples of Outputs
		The project facilitated information sharing regarding the upgraded test facilities. A site visit was also arranged for project stakeholders on 13 December 2017) to visit the test laboratories. These are documented in project reports, PSC meeting reports and presentations available on the project website. It was also confirmed during an interview with the Bureau of Standards.

Component 4. Knowledge management, information sharing, learning and collaboration network embedded among key national stakeholders and initiated within the region

239. Table 14 provides an overview of the outputs anticipated and delivered for Component 4, as redefined in the reconstructed TOC at Evaluation.
240. Knowledge sharing was somewhat confined by project delays and the availability of performance data.
241. The survey responses suggested communication reach had some limitations with 3 out of the 13 respondents being unaware of the ZNEB.
242. All respondents and interviewees expressed interest in the learnings from the project, confirming that the work was topical and highly relevant.
243. Regional reach could not be confirmed.

Table 14. Outputs from Component 4

Expected project Outputs (as restated for reconstructed TOC)	Status	Evidence / examples of Outputs																		
4.1. Increased knowledge among a diverse range of stakeholders (policymakers, building professionals, financial institutions, regional representatives and general public) regarding net-zero energy and green building opportunities and benefits in (sub-) tropical climates.	Partial	Six workshops were hosted with participation and presentations from diverse participants from the country and region. Attendees represented both public and private sector, including government, regulatory authorities, building professionals, academia and finance institutions. Workshops included:																		
		<table border="1"> <thead> <tr> <th>Date</th> <th>Title</th> <th>No. of Part.</th> </tr> </thead> <tbody> <tr> <td>23 March and 6 June, 2017</td> <td>National policy and plan for NZEB development and retrofitting of all suitable existing buildings in Jamaica</td> <td>Not captured</td> </tr> <tr> <td>14 – 16 May 2018</td> <td>Investment grade calculation, analysis and modelling for sustainable energy applications</td> <td>22</td> </tr> <tr> <td>30 April 2019</td> <td>Energy Retrofit Workshop</td> <td>42</td> </tr> <tr> <td>26 November 2019</td> <td>"Promoting Ultimate Energy Efficiency in Buildings in the Caribbean - Showcasing Net Zero Energy Building and National Housing Trust Buildings"</td> <td>73</td> </tr> <tr> <td>4 – 6 December 2019</td> <td>Investment grade calculation, analysis and</td> <td>8</td> </tr> </tbody> </table>	Date	Title	No. of Part.	23 March and 6 June, 2017	National policy and plan for NZEB development and retrofitting of all suitable existing buildings in Jamaica	Not captured	14 – 16 May 2018	Investment grade calculation, analysis and modelling for sustainable energy applications	22	30 April 2019	Energy Retrofit Workshop	42	26 November 2019	"Promoting Ultimate Energy Efficiency in Buildings in the Caribbean - Showcasing Net Zero Energy Building and National Housing Trust Buildings"	73	4 – 6 December 2019	Investment grade calculation, analysis and	8
		Date	Title	No. of Part.																
		23 March and 6 June, 2017	National policy and plan for NZEB development and retrofitting of all suitable existing buildings in Jamaica	Not captured																
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Expected project Outputs (as restated for reconstructed TOC)	Status	Evidence / examples of Outputs			
		<table border="1"> <tr> <td></td> <td>modelling for sustainable energy applications</td> <td></td> </tr> </table> <p>Numbers of participants in training events not actively tracked / documented. The above list was extracted by the Evaluator from workshop reports, where available.</p> <p>Several articles were published by the media documenting the different milestones and events. The project counted 56 articles – many of these have been saved by the project team, while others are readily available with a Google search.</p> <p>During interviews, stakeholders commented on the high-level government attendance at all project events. Attendance and keynote addresses by Ministers and other high-level attendees was confirmed by media reports and workshop reports.</p> <p>The project also produced a newsletter that was distributed electronically to actively disseminate information. No feedback was collected from participants to assess the perceived value of the information shared at workshops or by other means.</p> <p>The project documented 185 visitors to the ZNEB (as reported in the last PIR). There is no record of who the visitors were, and gender data were not collected for participants.</p> <p>Interviews and survey results confirmed interest among stakeholders in the performance data for the NHT retrofit and ZNEB projects.</p> <p>UWI has indicated their intent to establish a Science Academy within the ZNEB, using the building as a learning tool for students from primary to tertiary level.</p>		modelling for sustainable energy applications	
	modelling for sustainable energy applications				
<p>4.2. Online knowledge platform hosting knowledge / learning materials, studies, cost/benefits analyses methodologies and financial and economic evaluation models available to national, regional and global policymakers and building professionals.</p>	<p>Achieved</p>	<p>The project used the Buildbetterja.com website as knowledge platform for the project. It is well populated and is still operational, with updates posted until 2021. The project reported a total of <u>3,264 unique visits</u> to the website between its launch on 1 May 2016 and the last reporting date, 30 June 2020.</p> <p>The website is not logically structured. By means of an example, information is posted per workshop rather than per topic. The site's search function is also limited. It does contain a wealth of information, video clips of interviews, various publications, a photo gallery, and workshop presentations, among others.</p> <p>The project utilised social media to disseminate information, including: Twitter, Instagram, Facebook and YouTube⁷⁶. Followers range between 300 and 450, depending on the platform.</p>			

⁷⁶ Available at: <http://www.buildbetterja.com/>; <https://www.facebook.com/BuildBetterJa>; <https://twitter.com/buildbetterja>; <https://www.instagram.com/buildbetterja/>; <https://www.youtube.com/c/buildbetterja>;

244. Rating for availability of outputs is **Moderately Satisfactory**.

Achievement of Project Outcomes

245. Achievement of project outcomes were based on several assumptions as captured in the reconstructed TOC and summarised below (Table 15). As shown, not all assumptions held fully, but most proved to be sound or to hold partially.

246. The project had relied heavily on the PSC advocacy role and ensuring learnings are integrated and embedded into various structures and frameworks – most importantly in government. While this did not transpire as anticipated, the large number of parallel projects (refer Section A. Strategic Relevance, Complementarity with Existing Interventions/ Coherence) in the country proved beneficial in this regard, with a general surge in EE and RE related initiatives seen throughout the country in the recent decade.

Table 15. Assumptions informing direct outcomes

Assumption (Numbered to correspond with TOC)	Status	Comments / Evidence
1. Government adopts necessary regulatory framework	Partially holds	Building Act and Building Codes were adopted. Retrofit policy was not adopted.
2. Compliance with the EE codes, standards & regulations.	Unknown, but likely to hold	The Building Act ⁷⁷ describe roles and responsibilities for compliance comprehensively. There is no data to confirm the level of compliance. Stakeholders interviewed had varying opinions regarding the level of compliance in the country, but codes are mandatory and therefore compliance is still assumed.
3. Government and other PAC players fully cooperate with dissemination and integration of learnings	Partially holds	Government did not participate in the project governance structures as planned. Government officials did support events and workshops and generally encouraged the uptake of EE and RE in buildings in the country.
5. National and regional networks exist that can be strengthened and leveraged to share learnings and integrate into different practices and other areas with similar climatic conditions.	Partially holds	Networks have not been fully functional Dissemination and integration of knowledge has been confined.
6. National Energy Policy lays groundwork for advanced EE and RE in building codes and standards.	Holds	National Energy Policy has been repeatedly referenced as backdrop for promoting EE and RE.

247. Implementation delays meant that some drivers were established late or remain pending. Drivers to support transition from outputs to project outcome(s) are thus only partially in place.

⁷⁷ The Act requires all persons involved in the building process to ensure compliance with the building code. This includes the builder, the owner or occupier of the land where the work is being carried out, persons concerned with the management of the building work and the building practitioner or building professional who prepares plans and specification for the building work. Building professionals who are often relied upon by home buyers and developers for their expertise in construction practices, will play a key role in fostering compliance with the National Building Code. Under the Act, the local authority, or municipal corporation, for each parish is designated as the local building authority and is generally responsible for the administration and enforcement of the provisions of the Act, the National Building Code and any regulations made under the Act.

Table 16. Drivers informing direct outcomes

Drivers (Numbered to correspond with TOC)	Status	Comments / Evidence
1. The availability of relevant and vetted design data will support improved design and construction.	In place	Comprehensive design data for the ZNEB and NHT retrofit building shared. General design guidance relevant to the climatic conditions made available.
2. Awareness and knowledge will lead to adoption among all role players	Partially in place	Extensive knowledge resources developed and shared. Interview responses highlighted the importance of actual performance data to drive adoption.
3. Evidence of cost/benefits & performance will change behaviour	Pending	Pending availability of metering data.
4. Education, training, workshops will facilitate knowledge sharing and encourage adoption	In place	Six workshops held and material incorporated into education programmes. Participation levels in workshops and events show interest and indicates reach.
5 PAC members effectively disseminate and integrate the learnings to various spheres of influence (policy, building codes and standards, design, building practices, etc.)	Partially in place	Representation on the PSC not as comprehensive as anticipated for the PAC. Indications are that members generally played an active role in promoting the project.
7. Establishing knowledge management and regional collaboration structures will create a culture of resource efficiency	Partially in place	Knowledge platform established. Other regional structures established with the purpose of knowledge sharing, e.g. CARICOM Energy Unit and CCREEE. Linkages to the project and unique knowledge resources not strongly established.
8. Evidence of life-cycle costing will overcome initial capital investment hurdles.	Pending	Stakeholder interviews confirmed this expectation, but demonstrated cost benefit data is still pending.
9. Project outputs are in time to inform planned revision of codes and standards.	Partially in place	While EEC was adopted into the codes, learnings from the ZNEB and NHT retrofit were not available to materially shape the codes. Subsequent revisions can benefit from the project learnings.

248. Without suitably defined and consistent indicators and credible monitoring data, it is difficult to assess the level of achievement of project outcomes.

249. The extent to which outcomes were realised were tested during interviews as well as using a short survey shared among building professionals. All data shared by the project team have also been considered as well as any supplemental material found during desktop studies.

250. It is apparent from the assessment below that the achieved outcomes are not all entirely attributable to the project 's contribution. At best, it is possible to say that the combined efforts of all parallel initiatives are collectively contributing towards the desired outcomes.

251. Yet, the most important outcomes for advancing to intermediate states have been established, either partially or fully. These are indicated with a (*) in the table below.

252. All respondents agreed that the ZNEB is an invaluable asset to the country and the region with the potential to significantly influence design and building practices. With the

delays, the building contribution has not been fully leveraged. Learnings from the ZNEB and NHT can contribute substantially to achieving the outcomes and transitioning to the intermediate states defined for the project, as highlighted in Table 17 and Table 18. During interviews the UWI has committed to pursue data collection and active dissemination of data and learnings, suggesting a high likelihood of the intended contribution materialising.

253. Table 17 summarizes progress against targeted, direct outcomes⁷⁸ as defined in the reconstructed Theory of Change.

Table 17. Delivery on direct outcomes

Outcomes as per the reconstructed TOC at evaluation	Status	Comments / Evidence
<p>Outcome 1. Inclusion of advanced EE and RE practices, solutions and technologies in the design, development and renovation of buildings in Jamaica (*).</p>	<p>Partially achieved</p>	<ul style="list-style-type: none"> - <u>Government-led retrofits of public buildings</u> through (i) the Energy Efficiency and Conservation Programme (EECP) launched in 2012 targeted the design and execution of concrete EE and Energy Conservation (EC) cost-saving measures in the public sector, and (ii) Energy Management and Efficiency Programme. Media reports suggest at least 80 public facilities including schools, hospitals and government buildings are included in the rollout. - Among <u>private sector developments</u>, the following evidence were reported by the project demonstrating an increased uptake of EE and RE: An EE housing development, Green Village was started in 2015, with the first phase completed in 2017. Green Village is the first green affordable multi-family housing development in Jamaica (St. Catherine, Spanish town). By 2020 the development had been completed. The project noted that 55 units had been sold and handed over. - Survey responses from building professionals showed <u>54% of respondents had integrated EE requirements into buildings</u>, either meeting or exceeding the building code requirements. - <u>All interviewees</u> appealed for performance data from the demonstration facilities to facilitate communication with clients and government (BoS, JIE, JIA)
<p>Outcome 2. <u>Increased investments and uptake</u> of demonstrated EE and RE measures in renovated and new buildings in Jamaica.(*)</p>	<p>Achieved</p>	<p>Since a baseline was not defined, an increase is measured relative to zero. All new investments and developments were therefore considered.</p> <p>In addition to the uptake noted for Outcome 1, the following also suggests increased investment and uptake of EE and RE measures:</p> <ul style="list-style-type: none"> - <u>Increased uptake of audits and loans for retrofits</u> offered by the Development Bank of Jamaica (DBJ). The DBJ reported lending over USD 28 million to SME's for EE and RE projects. - <u>Interview respondents confirmed growing interest</u> among developers and homeowners in EE and RE measures. Preference is however still given to interventions with short payback period (1 to 3 years). Indicative only from interviews and survey responses. - No data could be found to demonstrate market growth.

⁷⁸ Direct outcomes understood as short and medium-term effects of the intervention's outputs; a change of behaviour resulting from the use/application of outputs, which is not under the direct control of the intervention's direct actors

Outcomes as per the reconstructed TOC at evaluation	Status	Comments / Evidence
<p>Outcome 3. Policy and regulatory environment <u>amended to instruct minimum EE and clean energy requirements</u> for all future buildings and renovations through building codes and standards (*)</p>	<p>Achieved</p>	<ul style="list-style-type: none"> - The <u>Building Act 2018</u> was passed by the Parliament of Jamaica in 2018 and came into effect on 15 January 2019. The Act repealed previous acts and makes new provisions for the regulation of the building industry in Jamaica. - The Act establishes a <u>National Building Code for Jamaica</u>, which is comprised of a series of regulations for different categories of building work. Under the Act, The International Building Code⁷⁹ together with 11 documents which have been declared by the Bureau of Standards to be standards of specification, are <u>prescribed</u> as the National Building Code of Jamaica (JNBC). - The Jamaican Institute of Engineers (JIE), who was also represented on the PSC of the ZNEB project, was closely involved in the revision of the JNBC⁸⁰. - The new building code is based on the International Energy Conservation Code (IECC). This document addresses energy efficiency and/or conservation in all types of commercial, office, hotel, high rise residential and also in low rise, detached multi-family residential buildings. - The IECC defines requirements for the building components or building systems that affect energy use – aiming to improve effective use of energy. It covers <u>design and construction of the building thermal envelope (wall, roof, floor, doors, windows and skylights), lighting, ventilation as well as cooling and heating equipment.</u> - The EEC component adopted by Jamaica is based on the international code. It does not adequately reflect local conditions or learnings from the ZNEB. Building Code Workgroup members (BoS and JIE) indicated <u>strong interest in the performance data from the demonstration buildings to inform future revisions of the building code.</u> In particular, interest was expressed in low-cost interventions including passive design that can be prescribed as mandatory, minimum requirements for buildings.
<p>Outcome 4. National plan for retrofitting all suitable existing buildings to the minimum efficiency standards in place. (*)</p>	<p>Partially achieved</p>	<ul style="list-style-type: none"> - The review and recommendations that were developed (Bernard, K. 2018. <i>National policy and plan for NZEB development and retrofitting of all suitable existing buildings in Jamaica</i>) were handed over to the Minister of Science, Energy and Technology in 2018 (photo evidence of the event). - Although the policy recommendations were not formally adopted, the Minister reportedly (anecdotal evidence) referred to the extensive efficiency upgrades being implemented by the government in public facilities with a loan from various donors (refer complementary initiatives documented under Strategic relevance), suggesting retrofits were already proceeding as per the proposed policy. This work continues with the GoJ having budgeted approximately USD 1.16 billion for its Energy Management and Efficiency Programme – that

⁷⁹ Specifically based on the American International Building Code (IBC) as developed by the International Codes Council (ICC).

⁸⁰ <https://www.jiejamaica.org/building-code-comer/>

Outcomes as per the reconstructed TOC at evaluation	Status	Comments / Evidence
		includes promoting energy efficiency in government facilities – in the 2022/23 fiscal year ⁸¹ .
<p>Outcome 5. Sustainability of clean energy benefits to consumers and the economy secured through a quality supervision system and functional test facilities established.</p>	Achieved (indirect)	<ul style="list-style-type: none"> - The Bureau of Standards of Jamaica (BSJ) <u>partnered with World Bank and CARICOM Regional Organization for Standards and Quality</u> (CROSQ -www.crosq.org/) to develop and expand testing facilities for EE appliances including Heating, Ventilation and Air Conditioning (HVAC) systems. Appliance labelling has also been introduced by a parallel initiative. - Presentations regarding the expanded test facilities and supervision system were given by the BoS (presentations reviewed as part of the evaluation), a site visit was arranged for project stakeholders and implementation was confirmed during interviews. - A laboratory to test solar PV panels and equipment was identified as a remaining gap.
<p>Outcome 6. Learnings integrated into various spheres of policy, planning, academic teaching and research programmes as well as building practices in Jamaica. (*)</p>	Partially achieved	<p>In addition to the adoption of the new Building Act, EEC building codes, and extensive efficiency upgrades to public facilities already discussed, the following areas have been influenced by the project learnings:</p> <ul style="list-style-type: none"> - Academic courses offered by both UWI and UTECH School of Architecture have taken cognisance of the project learnings and have expressed intent to introduce learnings material into their respective curricula. - The UWI confirmed the intention to establish a Science Academy within the ZNEB and offer short courses on topics related to sustainability. - The ZNEB was expected to host an Alternative Energy Training programme developed by the Wigton Wind Farm, using the Alternative Energy Research Lab as well as a conference room. - The Science Academy is expected to host learners from all ages and education levels. It has been equipped with a variety of tools for this purpose, including (i) an IKS Photovoltaic - Solartrainer Junior for school outreach programmes, (ii) leXsolar - Wind Professional targeting wind technicians and complements the course curriculum offered by UWI, (iii) leXsolar - SmartGrid Professional/leXsolar-SmartGrid Ready-to-go and (iv) leXsolar-Hydropower Ready-to-go – both these to support student learning and off-site instruction. The purchase of training kits was confirmed against inventory lists. <p>Implementation of the above has been delayed because of the COVID pandemic. The UWI confirmed, during interviews, that these are planned and/or will resume post-COVID.</p> <p>During interviews, various industry stakeholders, notably the UTECH, JIE, JIA, JPS and BoS, expressed interest in these facilities being utilised for teaching and demonstration purposes.</p>
<p>Outcome 7. Knowledge management, information sharing, learning, and collaboration networks</p>	Partially achieved	Interviews and survey responses suggested that there is a core group of professionals within the building sector who are interested in advancing EE and RE and would be interested to continue engagement on this topic.

⁸¹ 2022/2023 Estimates of Expenditure, tabled in the House of Representatives by Minister of Finance and the Public Service, Dr Nigel Clarke, on February 10.

Outcomes as per the reconstructed TOC at evaluation	Status	Comments / Evidence
embedded among key local stakeholders and initiated within the region.(*)		While the CCREEE and CARICOM mandates suggest they would similarly be interested, this could not be confirmed. The placement of the ZNEB with an academic institution, suggest this facility and learnings from the project can be leveraged to build an active community of practice.

254. Rating for achievement of direct outcomes is **Moderately Satisfactory**.

Achievement of Likelihood of Impact

255. At the time of the evaluation, none of the intermediary states had been achieved, as shown in Table 18. It is not required for any of the intermediate states to have been achieved at this stage and the project is only held accountable for achievements up to project outcome level. The status of intermediate states is only noted to gauge the likelihood of impact and/or sustained results.

256. In making the transition from outcomes to intermediate states, the same assumptions applied as shown in Table 15. As already discussed, not all assumptions held fully, but most proved to be sound.

257. In addition, it was also assumed that there would be a willingness among stakeholders to change and/or an interest in RE & EE from households, developers, building operators and professionals. Rising electricity costs, stakeholder feedback and survey results all suggest these assumptions to hold true.

258. Similarly, as shown, drivers to support the transition to intermediary states are partially in place and likely to be established in time. As discussed for outcomes, the transition will be largely dependent on performance data being collected and disseminated – i.e. a key driver as recognised for achieving all intermediary states below.

259. Recent media reports⁸² suggest a strong push among politicians to address energy challenges, including reliance on costly fossil fuels and imported oil and to drive the aspirations of the National Energy Policy for more diverse and efficient use of energy. This is largely driven by global developments, rising oil prices and the war between Russia and Ukraine. While the level of urgency may not be sustained, it will most likely remain at suitably high levels to maintain momentum with the global energy transition.

Table 18. Progress towards intermediary states

Intermediary state	Status	Anticipated trajectory
Large scale adoption of EE and RE technologies and solutions among building professionals and developers in Jamaica.	Not yet Achieved	<ul style="list-style-type: none"> - Survey results suggested this can be achieved, with 100% of respondents inspired to adopt ZNEB learnings into building practices. - Survey respondents noted concerns regarding the cost-effective implementation of ZNEB principles or EE retrofits. This underscored the importance of performance data and cost benefit data being made available to create awareness, improve understanding and inform decision-making.

⁸² JULIAN J. ROBINSON, M.P. 10 March 2022 OPPOSITION'S REPLY TO THE BUDGET PRESENTATION: Narrowing the Gap: Uplifting the People

Intermediary state	Status	Anticipated trajectory
Continual enhancement of policy and regulatory environment towards a zero-net energy building goal for the country.	Not yet Achieved	<ul style="list-style-type: none"> - There is currently no commitment from the Jamaican Government to strengthen the policy framework towards ZNEBs. - The previous Minister of Energy, Andrew Wheatley, had reportedly stated the intention for all buildings to be ZNEBs by 2050. This has however not been formalised. - The building codes revisions are scheduled every four years and both the JIE and BOS expressed interest in using project learnings to inform future revisions. - UWI has also committed to engage with the building working group and share data
Increased market demand for and investment in high efficiency and clean energy technologies and solutions in Jamaica.	Not yet Achieved	<ul style="list-style-type: none"> - No market data could be found to assess market trends in EE or RE equipment including solar PV, solar water heating, efficient lighting, etc. - Survey responses provided no indication of trends. - Because of the devaluation of the currency, Jamaica has had limited benefit from downward technology price trends.
Improved thermal comfort levels for building occupants across all sectors (residential, commercial, etc.)	Not yet Achieved	<ul style="list-style-type: none"> - It is likely that ZNEB using passive design principles will enhance thermal comfort for building occupants. - Of the 7 survey respondents who have implemented EE and RE, 3 noted an improvement in thermal comfort.

260. Rating for likelihood of impact is **Moderately Likely**.

Strategic Questions

261. The evaluation was required to consider 4 strategic questions. The answers to these questions contribute a better understanding of the likely project trajectory and longer-term impact. They are therefore included here for consideration in assessing the effectiveness of the project contribution.

Table 19. Strategic questions

Strategic question	Evaluation Finding
Question 1. To what degree of success has the project facilitated energy efficiency policies for the transformation to a low-emission building sector in Jamaica	<p>The country adopted a Building Act and new Building Codes that incorporates energy efficiency and conservation requirements for the first time. Members of the technical working group responsible for the building codes were also part of the project steering committee. Stakeholder feedback confirmed interaction, but delays with performance data from demonstration buildings confined the extent to which the project influenced the content of the building codes. There is however an expectation that performance data will inform future iterations of the building codes.</p> <p>The national retrofit policy was not adopted.</p>
Question 2. The project has created evidence of affordable and effective energy efficiency measures for buildings, addressing barriers held by key stakeholders on the technological and economic viability of such technologies in Jamaica. Which opportunities exist, or have already been set in motion, that are likely to	<p>Evidence is pending availability of performance data and comparative analyses of costs and benefits.</p> <p>At this juncture, the reach and impact of the project beyond the two demonstration buildings is uncertain, but <u>significant potential exist</u> if performance data can be collected, analysed and effectively leveraged to influence decision-making and policy setting.</p> <p>Opportunities exist in:</p>

Strategic question	Evaluation Finding
scale-up project outcomes within Jamaica and/or have a catalytic effect to other nations in the Caribbean?	<ul style="list-style-type: none"> - The creation of a learning platform / Science Academy at the university, - Influencing future revisions of the building codes, - Interest in the findings expressed by building professionals, - Interest expressed by the JIE and BoS to drive 'localisation' of the building codes for local conditions using data and learnings from the demonstration buildings - The regional footprint of the UWI with different campuses and established networks throughout the region. <p>A direct regional interface could not be confirmed, but independently, regional structures to encourage EE and RE have already been created.</p>
<p>Question 3. Based on the analysis of the Theory of Change at evaluation, what factors still present the highest risks to success in transitioning to net zero energy buildings in Jamaica post-project?</p>	<p>The availability of credible evidence is a unique contribution from the project, intended to unlock uptake and investment at scale. Follow-through on performance monitoring, data collection, analysis, reporting and effective leveraging of this information will be critical.</p> <p>Survey results supported this, pointing to lack of awareness, and understanding and initial capital investments being the greatest hurdles to adoption. The survey also suggested that questions related to the cost-effectiveness of EE, RE and ZNEB can be addressed with performance data from the ZNEB and retrofit buildings.</p> <p>Failure to do so, presents the highest risk.</p>
<p>Question 4. Has the evaluation identified any unintended results (positive or negative) deriving from the project's implementation, and if so, what was it and how might it affect the intended project Impact?</p>	<p>None</p>

262. Based on the availability of outputs (moderately satisfactory at 71% achieved), achievement of direct outcomes (moderately satisfactory) and the likelihood of impact (moderately likely), effectiveness is rated moderately satisfactory.

Rating for Effectiveness: Moderately satisfactory

E. Financial Management

263. The total project budget, as already stated, was USD 7,461,000. GEF provided grant funding of USD 2,361,000. USD 5,100,000 were committed in co-financing, matching the GEF grant 2:1.

264. Financial management information for the project, including expenditure reports, cash advances, annual audits, and co-financing reports, were readily shared for evaluation. The project team provided comprehensive project finance documentation supplemented by additional clarifications and updates from the FMO.

Adherence to UNEP's Financial Policies and Procedures

265. Representatives from both UNEP and the PMU confirmed the financial management and reporting of the project to have been sound, adhering to UNEP's policies and procedures.

266. Procurement planning was communicated effectively, with all requests for cash advances approved and disbursed in a timely manner.

267. Regular expenditure reports (six-monthly and annual) were submitted on time and any clarification questions were timeously addressed. Financial statements for the project were audited annually.
268. Expenditure was within the approved annual budgets (as revised). In discussions with the FMO, they indicated their primary focus had been on ensuring expenditure is aligned with and remains within budget. This meant that the significant under-expenditure was not flagged early as a concern.
269. The project budget per line item was presented in detail in the Project Document (Appendix 1). Subsequent expenditure reports track expenditure progress against each line item. Two revisions were made to the budget to meet changing requirements, the most recent in 2019. The revisions are comprehensively documented, showing budget transfers between budget line, with variations indicated and explained. It is also accompanied by a procurement plan and workplan.
270. The evaluation requirements call for an analysis of expenditure by project component. Table 20 shows the initial funding allocation planned for each component. The project did not maintain a complete record of expenditure against components. Expenditure reports tracked spend against budget lines rather than project components. The previous software system (IMIS) used for tracking and reporting, did not allow for reporting against activities. Consequently, expenditure reports cannot be linked back to components.
271. Rating for adherence to UNEP's policies and procedures is **Satisfactory**.

Completeness of Financial Information

272. Financial data is complete and comprehensive (refer response to the list of key documents A – H provided in Table 22 below).
273. The PMU reported significant difficulty with getting co-finance commitments realised. Despite having signed letters at design stage, co-financiers were uncertain of what co-finance entailed, how to report on co-financing and were also weary of being forced into making cash contributions. The PMU went to great lengths to help co-financiers quantify and document their contributions – a time consuming effort to meet reporting requirements.
274. The project's financial management and record keeping appear to have been outstanding. The only two shortcomings relate to (i) under expenditure against the budget and (ii) inability to track spend per component – likely a contributing factor to the ineffective utilisation of the available grant funding. Better visibility may have better facilitated reallocation of funding to support targeted results and impacts. Despite excellent scores against the financial management table (Table 22), this aspect is rated satisfactory for these two reasons.
275. Rating for completeness of project financial information is **Satisfactory**.

Communication Between Finance and Project Management Staff

276. Communication between the UNEP FMO and PMU were good, with no challenges reported or noted from the records regarding cash flow advances, reporting, etc.
277. Draft reports with comments and questions suggest active engagement between the FMO and PMU. Active and constructive engagement between parties were confirmed during interviews.
278. Disbursements were made on the back of complete and regular technical and financial progress reports. Frequency of reporting and exchange of information also confirms regular contact between the PM and FMO.

279. Failure to timeously flag and mitigate under-expenditure on the project is noted as a shortcoming of the communication.

280. Rating for communication between finance and project management staff is therefore rated **Satisfactory**.

Table 20. Expenditure by Outcome/Output

Component / Output / Outcomes	Estimated cost at design (USD '000)	Actual cost expenditure (USD)	Expenditure ratio (actual/planned)
Component 1. Green building design data relevant to (sub-) tropical climates	225	Not available	-
Component 2. Demonstrating economic and environmental benefits of advanced EE and RE in new and existing buildings in (sub-) tropical climates	1,475 (consolidation of original Components 2 and 3)	Not available	-
Component 3. Support for the adoption of EE and clean energy policy, standards and codes with evidence-based inputs and quality assurance frameworks and infrastructure	325	Not available	-
Component 4. Knowledge management, information sharing, learning and collaboration network embedded among key national stakeholders and initiated within the region	100	Not available	-
Project management	236	Not available	-
Total	2,361	1,811.8	76.7%

281. The under expenditure on the project (USD 549,182.86) equates to the total budget for Components 1 and 3 as shown above. This is 23% of the total project budget – almost a quarter of the budget – that was not spent. Under-expenditure is ascribed to project delays and some planned activities falling away in a changed implementation environment without being replaced (*refer Section V. F: Efficiency*). The currency devaluation also contributed to under-expenditure, with the weakening currency reducing all local costs against the initial budget.

282. In addition to the GEF grant of USD 2,361,000 (of which USD 1,811,817.14 were spent), the following co-finance was committed and contributed.

Table 21. Co-financing Table (GEF projects only)⁸³

Co-financing (Type/ Source)	UNEP own financing (USD '000)		Government (USD '000)		Other ⁸⁴ (USD '000)		Total (USD '000)		Total Disbursed (USD '000)
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	
- Grants	-	-	100	0	400	18	500	18	18
- Loans	-	-	-	-	-	-	-	-	-
- Credits	-	-	-	-	-	-	-	-	-
- Equity investments	-	-	-	-	-	-	-	-	-
- In kind support	50	10	-	-	4,550	5,651	4,600	5,661	5,661

⁸³ Populated using the last available co-finance report, June 2019.

⁸⁴ This refers to contributions mobilized for the project from other multilateral agencies, bilateral development cooperation agencies, NGOs, the private sector and beneficiaries.

Co-financing (Type/ Source)	UNEP own financing (USD '000)		Government (USD '000)		Other ⁸⁴ (USD '000)		Total (USD '000)		Total Disbursed (USD '000)
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	
- Other ⁸⁵	-	-	-	-	400	-	400	-	-
Totals	50	10	100	0	400		12,483	5,679	5,679

Table 22. Financial Management Table

Financial management components		Rating	Evidence / comments
1. Adherence to UNEP's/GEF's policies and procedures			
Any evidence that indicates shortcomings in the project's adherence to UNEP or donor policies, procedures or rules		S	Both the Implementing Agency and Executing Agency representatives confirmed the financial management and reporting of the project to have been sound, adhering to UNEP's policies and procedures. Regular expenditure reports (six-monthly and annual) were submitted on time and any clarifications questions were timeously addressed. Financial statements for the project were audited annually. One apparent shortcoming is the failure to track expenditure against project components. While budgets were developed and initially maintained per component, expenditure per component is not available . This is partially ascribed to the switch over to the UMOJA system from the old IMIS software.
2. Completeness of project financial information:			
Provision of key documents to the evaluator (based on the responses to A-G below)		HS	81% – 100% applicable items A G are complete and made available to the evaluation.
A.	Co-financing and Project Cost's tables at design (by budget lines)	Yes	Summary detail captured in the Project Document. Comprehensive breakdown of the budget included as Appendix 1 to the Project Document and reconciliation between GEF budget and Co-finance budget as Appendix 2. Co-finance letters include in Appendix 11.
B.	Revisions to the budget	Yes	The overall budget was not revised i.e., two no-cost extensions. Two revisions to the budget were recorded, the last dated 2019. The budget revisions are documented with explanations of variances. The PM confirmed that the budget was reviewed annually, per line item, in consultation with UNEP. Confirmed by records of expenditure reports with documented comments. Tracking of expenditure against technical components is not available for the project. This is partly ascribed to a system change from IMIS to UMOJA in 2017.
C.	All relevant project legal agreements (e.g. Small Scale Funding Agreement (SSFA, PCA, and Internal Cooperation Agreement (ICA))	Yes	Signed Project Cooperation Agreement (PCA) shared with copies of co-finance commitments included in the project document. One co-finance letter (Government of Jamaica for USD 100,000) was not available and not tracked as part of the co-finance reporting.
D.	Proof of fund transfers	Yes	Cash advance requests and signed approvals were made available.

⁸⁵ This refers to contributions mobilized for the project from other multilateral agencies, bilateral development cooperation agencies, NGOs, the private sector and beneficiaries.

Financial management components		Rating	Evidence / comments
E.	Proof of co-financing (cash and in-kind)	Yes	Co-finance reports are supported by signed submissions from co-financiers detailing co-financing contributions.
F.	A summary report on the project's expenditures during the life of the project (by budget lines, project components and/or annual level)	Yes	Expenditure reports by budget lines available to Q2 2020; comments on copies of expenditure reports indicating active engagement between FMO and PMU. As noted above, expenditure reporting per component is not available.
G.	Copies of any completed audits and management responses (where applicable)	Yes	Annual audit reports shared 2014 – 2019. It is noted that the audit report for 2019 is in draft (final version not available). No later audits were shared.
H.	Any other financial information that was required for this project.	N.A.	None identified
3. Communication between finance and project management staff		HS	
Project Manager and/or Task Manager's level of awareness of the project's financial status		S	Main shortcoming relates to the under-expenditure against the project budget. Interviewees confirmed that efforts were made to mitigate this before project close. Yet, USD 549,182.86 had to be returned to GEF unspent.
Fund Management Officer's knowledge of project progress/status when disbursements are done		HS	Disbursement requests supported by substantiating information and status updates. FMO found to be familiar with the project and status during interview.
Level of addressing and resolving financial management issues among Fund Management Officer and Project Manager/Task Manager.		HS	Feedback from interviews indicated that because of open channels of communication, these challenges were generally addressed and resolved with relative ease. Procurement planning was communicated effectively, with all cash advances requested, approved, and disbursed in a timely manner.
Contact/communication between by Fund Management Officer, Project Manager/Task Manager during the preparation of financial and progress reports.		HS	Notes on draft documents suggest active interaction and responsiveness by the PM. Confirmed during interviews by both the PM and FMO.

283. Despite sound financial management, record keeping and communication, the rating for the sub-sections and overall Financial Management is adversely impacted by the under-expenditure and inability to report against components. The combined rating across the sub-categories is **satisfactory** for these two reasons.

Rating for Financial Management: Satisfactory

F. Efficiency

284. The Project Cooperation Agreement (PCA) was signed in May 2013 (six months after CEO Endorsement of the project). The PCA states that project effectiveness is taken from date of the first instalment of funds i.e. end May 2013. While this initial delay was raised by stakeholders as a challenge, it is noted, but not considered part of this evaluation of efficiency. It is however considered under *Section 11: Preparation and Readiness*.

285. The project inception meeting, or "inaugural stakeholder meeting" was held in July 2013, followed by the inception report in November 2013 – a year after the CEO Endorsement. There is no evidence in the inception report that preparatory work (e.g. recruiting of project team members, procurement, or detail planning) had started prior to the signing of the PCA in May 2013. While this would have been 'at risk, the nature of the delay (i.e. only the timing of signing was uncertain, not the intention to sign the contract) suggests the six months could have been spent more efficiently. This is however not

common practice. Executing Agencies are reluctant to proceed with project activities pending the first cash advance and the appointment of the project manager as project owner.

286. It is noted that the workplan included in the Project Document and the Inception Report did not correspond to the components described and budgeted in the project document. Progress was tracked against this incorrect workplan until the second half of 2018, before it was corrected to correspond with the project document components and outputs. This would have severely misdirected project efforts for the full duration of the original implementation timeframe.
287. Coupled with the very limited description of components in the original project document (noted during Inception Phase of the Evaluation), the project team faced a significant hurdle to effective implementation. It is remarkable that the project was able to reframe its focus and contribution to align with the appropriate outputs during the last three years of project extension. This reflects both on the quality of the project design (previously evaluated in Section B) as well as the initial project oversight.
288. The project has had two 'no cost extensions' to the initial completion date of 31 July 2017. Extensions are summarised in Table 23, below.

Table 23. Project Extensions

Amendment to PCA (date signed)	Revised completion date	Motivation for extension
Amendment 1 (24 July 2017)	31 January 2020 (extended by 2.5 years)	Extension was to facilitate closure of the remaining activities. In particular, to: (1) obtain certification of the Net Zero Energy building (NZEB); (2) complete the retrofitting of the National Housing Trust building; and (3) handover the NZEB to the University of the West Indies (UWI).
Amendment 2 (17 May 2019)	31 March 2021 (extended by 1 year and 2 months)	As per above points 1 and 2.

289. The extensions were justified to ensure the completion of the demonstration facilities and secure sustainability of the project contribution post implementation.
290. Delays with the two demonstration facilities are attributed to the design, project costing and procurement process (e.g. tenders exceeding the budget), unanticipated equipment failures during commissioning, and bureaucratic challenges within government organisations related to various approvals, procurement and imports. The two demonstration projects were both large construction projects, using new technology not commonly available in the country.
291. The project underspent by nearly 25%. It did not fully meet or exceed the targeted outputs and is therefore not found to have delivered maximum results from the given resources. The underspend was not timeously recognised to allow for mitigation and/or the budget to be reallocated. Given the seven year implementation timeframe, an efficient project structure should have recognised and leveraged the currency windfall to enhance the project contribution.
292. The project did manage to adjust to the challenges with co-financing commitments (refer paragraph 273 under the preceding section). A similar and somewhat higher value of co-finance was secured, albeit it mostly in-kind contributions rather than any cash co-finance. With the NHT commitment to pay for their building retrofit based on the project-funded audit findings and recommendations, the project demonstrated a very efficient leveraging of the available project funds.

293. As noted during the project design, components were sequential, with the outputs from early components providing key inputs to later components e.g. input to policy and regulation and dissemination of knowledge and integration of learnings into other spheres of government. Delays with the initial development of design data and construction of demonstration projects, hindered the progress and effectiveness of later components.
294. Delays meant the inputs into policy and regulation were theoretical, rather than evidence based. Delays also mean that evidence-based content was not available for knowledge sharing and awareness creation under Component 5 (now Component 4).
295. These sequencing challenges were not considered or addressed in any obvious way. By means of an example, a contract was placed for the dissemination of information within a contracted timeframe. The contract commenced early in 2016 and was concluded by the end of 2017, with 98% of the budget spent. Communication efforts created awareness regarding demonstration projects, EE design guidelines, and events, including the launch of the building, through media releases, advertorials, sign boards. The contracted communication services were however concluded before demonstrated results were available to share. In reality, final results remain pending, with the facilities not occupied because of COVID.
296. As discussed under *Section V. D: Effectiveness*, delays with implementation meant that planned outputs were overtook by parallel interventions by other projects, displacing the need for some planned project activities. When discovered, earmarked resources were not effectively reallocated. It was noted that some options were explored to complement these initiatives by other parties, but no obvious solutions were found and implemented.
297. The project did collapse the separate PSC and PAC, anticipated at design stage, into a single entity, avoiding duplication and unnecessary demand on stakeholders' time.
298. The project experience underscores the importance of an active and empowered steering committee to (i) help steer the full scope of project efforts, (ii) facilitate effective interaction and interfacing with other role players and activities in the country, and (iii) improve the agility with which available resources were utilised or reallocated (i.e. facilitated adaptive management).

Rating for Efficiency: Moderately Unsatisfactory

G. Monitoring and Reporting

Monitoring Design and Budgeting

299. The Project Document contains a table (Table 2) with standard GEF Monitoring and Evaluation (M&E) requirements including progress and financial reports, inception workshop and report, annual and periodic progress reporting, project implementation reviews (PIRS), independent midterm and final evaluations. The budget made provision for under personnel, workshops, evaluation consultants, STA consultants and tripartite review reports. These requirements were generally adhered to, with exceptions noted for (i) the midterm review, (ii) tripartite reviews and (iii) the GEF tracking tool. It is noted, as a design flaw, that Table 2 is captioned "Summary M&E Plan" and appear to have been confused with the M&E plan that was documented in Appendix 7 of the Project Document.
300. The monitoring plan and accompanying budget developed at design stage (Appendix 7 of the project Document) did not correspond with the project results framework and it did not support effective tracking of performance against targeted outcomes and impacts. The M&E plan is incoherent. Targets do not correspond with indicators. Units of

measure for indicators do not correspond to the targets e.g. an indicator that is stated as “Number of” is not met with a target that is in a form of a number. Similarly, baselines are unrelated to indicators. Means of verification are irrelevant. The budget of USD 1,320,000 is unrealistic and not reflected in the project budget.

301. A well designed and implemented monitoring plan can be a very useful and low-cost tool to gauge progress towards outcomes and results and to inform refinement and direction changes during implementation. This monitoring plan offered no support to the project. When reviewed against the evaluation criteria for monitoring design and budgeting, it doesn't meet any of the parameters and is rated **highly unsatisfactory**.

Monitoring of Project Implementation

302. Monitoring of project implementation was done against the results framework and followed standard UNEP and GEF monitoring and reporting cycles. Although better than the M&E plan, the results framework suffered from many of the same challenges as the M&E plan with indicators, baselines and targets not corresponding.
303. The workplan used from 2013 to mid-2018 for tracking of progress was not aligned with the project design. This was only corrected mid-2018.
304. Until 2019, the results framework used in the Project Implementation Reports did not reflect the targets of the Project Document Results Framework (Appendix 4 of the Project Document).
305. Generally, indicators were measured from a zero base at the start of the project. By means of an example: Tons of CO₂ emissions **reduced** in the buildings sector with an absolute target of: Direct and indirect emission reductions of 4,254,949 tons of CO₂ from the building sector by 2035.
306. While a number of indicators were formulated as “Number of...” that could be counted from zero, the targets were stated as a relative value with no baseline. Examples include: “Increased awareness...”, or “...used in 10% of new buildings...”. The targets are not consistent with the unit of measure for the indicator and no baseline data were collected to assess the target against.
307. For some indicators, implementation data were collected, but is incomplete. Shortcoming here relate to data not being tracked or reported in the required unit of measure or as a cumulative value. By means of an example:
- For an indicator stated as: “Number of participants in training/ demonstration events...”, the results were reported as: “...over 50 participants at each of our Policy workshops in March and June of 2017.” It is unclear how many workshops were held and therefore the total number of participants. It is also not clear whether this is the only events or just the events during this specific reporting period.
 - It is further noted that the end of project target for this specific indicator was stated as: “Increased awareness of policymakers, government officials, owners of buildings and houses, architects, and construction companies of the benefits of retrofitting”. Since the target is not stated as a number, failure to track and report a cumulative number seem to be inconsequential.
 - Of the eight indicators formulated as “Number of...”, only one has a target that is stated as a number.
308. The review of Project Implementation Reports (PIRs), show that significant effort was made during the last three years of implementation to align progress reporting with indicators.

309. Given the issues raised, project monitoring has limited meaning and do not enable the project to effectively demonstrate its reach and impact.
310. The project did not conduct a mid-term review. This is a mandatory requirement for all GEF-financed full-sized projects, as outlined in the GEF Monitoring and Evaluation Policy⁸⁶.
311. The project was reviewed during an internal audit by the UNEP Office of Internal Oversight Services, Internal Audit Division: Audit of Management of Partnerships at UNEP, September 2019.
312. Funds were spent on monitoring in adherence to standard UNEP /donor reporting requirements⁸⁷ excluding the mid-term review that did not proceed as per plan or budget. The only other evidence of funds spent on monitoring was for the metering installed at the Zero Net Energy Building, intended to track energy usage, savings and renewable energy generated. Unfortunately, data collection has not been maintained – mainly ascribed to the building being in disuse because of the COVID pandemic. The university confirmed their intention to resume data collection when the building is operational again.
313. This specific sub-component of Monitoring and Reporting is rated **Moderately Unsatisfactory**.

Project Reporting

314. Project reporting records are complete, with all reports available from 2013 until project closure. The project adhered to the standard UNEP – EA – GEF reporting cycles.
315. There is substantial evidence⁸⁸ of collaboration and communication between the project team and UNEP representatives (Task Manager and FMO) in draft copies and revisions of reporting for the period from 2018 to 2021.
316. Evidence was collated and maintained by the PMU and has been shared to support the reported progress (refer Annex III for a list of key documents made available by the PMU to support reported activities and progress).
317. Data is not reported by vulnerable or marginalised groups or gender, because this was not a requirement of the project at design stage. During interviews it was noted that women are generally more likely to pursue tertiary education. If participation in training events and site visits were documented by gender, it may have been possible to show the share of women exposed to the project. It is however not possible to back fit this type of data collection for the project.
318. At project completion, documentation and reporting are found to be of high quality and records are complete and well organised. Steering committee meetings and workshops are well documented. Progress reporting is well substantiated with evidence collected and easily accessible.
319. Despite the reporting records being comprehensive, the errors in the early reporting as it pertains to tracking against the incorrect workplan and incorrect targets in the results framework are problematic. It is partly redeemed by the substantial improvement in the quality of reporting since 2018.

⁸⁶ <https://www.thegef.org/projects-operations/policies-guidelines>, Evaluation Policy; and prior to this the 2010 revision of the policy: REVISION OF THE GEF MONITORING AND EVALUATION POLICY, GEF/ME/C.39/6/Rev.1 (November 17, 2010)

⁸⁷ This includes the inception workshop and report, preparation of the annual PIR and half-yearly reports, organisation and reporting on steering committee meetings, participating in fortnightly calls with the UNEP Task manager.

⁸⁸ Notes and comments on various iterations of draft documents for the period 2018 to 2021 suggest active interaction between the FMO/Task Manager and PM. This was confirmed (unprompted) during interviews by both the PM and FMO.

320. This sub-component scores a **Satisfactory**.

Rating for Monitoring and Reporting:	Moderately Unsatisfactory
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H. Sustainability

321. As previously discussed in *Section D: Effectiveness*, the project has made a tangible contribution to the built environment in Jamaica. The two demonstration projects were successfully completed. Both buildings are prominent structures owned and occupied by prominent institutions.
322. Stakeholder responses generally indicated a strong interest in seeing the sustained impact of the demonstration facilities and results informing an accelerated adoption of EE and RE into facilities in all sectors.
323. During interviews, multiple stakeholders indicated an interest in the performance data from the demonstration projects. The institutes of engineers and architects expressed interest in data for design purposes and to support clients with informed decision-making. Several stakeholder groups (JIA, JIE, BoS, academia) expressed interest in performance data to inform future revisions to the building codes.
324. Multiple stakeholders, including those from academia and industry associations, indicated interest in using the physical structure for demonstration purposes – as a teaching tool for future generations of building professionals.
325. The following are (i) in place or (ii) have been established to safeguard the continued contribution from the project:

Socio-political Sustainability

326. The overall policy direction is committed to clean energy, climate mitigating and sustainability (*refer Section A: Strategic Relevance*). Implementation experience during project design and implementation (*refer Section C: Nature of the External Context*) highlighted the variability in political will to aggressively drive energy efficiency and clean energy objectives. Evidently, the urgency of achieving ambitious targets is dependent on the price of electricity and oil. The current market and price trajectory suggests cleaner energy solutions will again take centre-stage in Jamaica in the foreseeable future. Anecdotal evidence from the project team and UWI suggests that there has already been a surge in interest from politicians in work developed by the project. The demonstration facilities, publications and training material remain credible, relevant and available to respond to requests for information.
327. Rapidly escalating electricity costs will also serve as a driver for improved EE and clean energy solutions among building and homeowners. Financing solutions, albeit limited, are available through the Development Bank of Jamaica (DBJ) to new building owners to encourage investment in EE and RE. Recent political activity has seen a call for more aggressive promotion and expansion of this line of funding⁸⁹.
328. Interviewees, as well as engineers and architects who participated in the survey, confirmed a growing interest, both among themselves and building owners, in EE and RE solutions for buildings.
329. The Government of Jamaica has continued its commitment to public building efficiency upgrades under the Energy Management and Efficiency Programme until 2023 (*refer Table 10, Section V. A: Strategic Relevance*).

⁸⁹ Robinson, Julian J., 10 March 2022. Opposition's reply to the Budget Presentation.

330. Although clean energy will always contend with other priorities such as health or social welfare, it is unlikely to be excluded from among top government priorities in the coming years.
331. The sustainability of project outcomes is thought to be moderately dependent on social and political factors. Adequate measures are in place to sustain outcomes.
332. Rating for socio-political sustainability is **Moderately Likely**.

Institutional Sustainability

333. The new building codes were adopted in 2018, for the first time incorporating energy efficiency and conservation (EEC) in the requirements. Further strengthening and tailoring of the clean energy requirements for local conditions in future iterations of the codes remain likely; revisions are planned for every 4 years. This was confirmed by multiple stakeholders who indicated interest in passive design elements and low-cost solutions proven in the demonstration projects that can be incorporated as minimum requirements in the codes.
334. The regional buildings codes, incorporating EEC, have also been adopted more recently, suggesting a general interest in and shift towards more sustainable building practices in the region.
335. The ZNEB has formally been handed over to the UWI, who has committed to (i) continued operation and maintenance, (ii) monitoring of energy performance, and (iii) utilisation of the facility for learning purposes. The building had already been adopted into the existing portfolio of university buildings and will included in regular maintenance, repair and upkeep. During interviews, UWI representatives shared that they had ambitious plans to leverage this facility for learning across all levels of education (primary to tertiary). While the implementation of plans has been delayed due to the COVID-19 pandemic, the UWI was confident, based on experience with similar course offerings, that this will be a successful and income-generating use of the facility.
336. Interviews with the UWI noted their intent to provide input and supply performance data to the technical work team responsible for the revision of the building codes. They also stated their intent to provide expert input and share findings from the ZNEB to support all relevant policy developments.
337. The future of the ZNEB and realisation of the full intended benefits of this facility depend on business as usual (BUA) resuming at the university after the COVID-19 pandemic. Performance monitoring and demonstrated energy usage will depend on the building being fully occupied. It is highly likely that university operations will eventually return to BUA. However, opportunities have already been considered (and volunteered during interviews) by various stakeholders to ensure continued utilisation of the ZNEB as a virtual training facility.
338. The retrofitted headquarters building of the NHT has established a prominent demonstration facility belonging to an institution that is responsible to finance and develop public housing. The final aspects of the NHT retrofit were reportedly completed early in 2022. While the learnings of the retrofit project have not yet found its way into the NHT's housing developments and plans, this may still be case following completion of the retrofit.
339. The continuation of the Build Better Jamaica online knowledge platform has not been secured. At present it is a standalone, project website. Ideally this should be integrated into a university or government website where it will be maintained and remain live.

340. With this one exception, the outputs⁹⁰ of the project have been embedded into institutions with established networks and channels of communication to inform continued consideration and future planning and decision making. The sustainability of project outcomes is therefore thought to have a low dependence on institutional factors. Adequate measures are in place to sustain outcomes.
341. Rating for institutional sustainability is **Likely**.

Financial Sustainability

342. Most project outcomes are not dependent on continued financial support from this project. Future revisions of the building codes, operation of test facilities, policy revisions, etc. will be implemented independently of this project. Expert inputs by the university into these processes should not carry any additional costs.
343. Commitment has been secured from UWI for continued maintenance and utilization of the ZNEB as well as the monitoring and reporting of performance data. Funding constraints were noted for (i) optional changes to the grid connection with supplemental battery support, and (ii) any unexpected equipment failure.
344. It is noted that the UWI has been under financial strain and activities may be subject to cost cutting measures in future.
345. The sustainability of project outcomes is therefore thought to have a low to moderate dependence on finance. Adequate measures are in place to sustain outcomes.
346. Rating for financial sustainability is **Likely**.

Rating for Sustainability: Moderately Likely

I. Factors Affecting Performance and Cross-Cutting Issues

Preparation and Readiness

347. As noted earlier, the project experienced its first delay right at the start, taking six months between GEF CEO endorsement and conclusion of the Project Cooperation Agreement (PCA) with the UWI. The delay is confirmed by the final signing dates on the cooperation agreement. The delay is attributed to the Vice Chancellor of the UWI delaying signing until a launch event could be scheduled. The first instalment of funds was processed two weeks after signing of the PCA.
348. As discussed in *Section V. F: Efficiency*, an inception meeting, or “inaugural stakeholder meeting” was held within two months of the PCA, in July 2013. The inception report was completed in November 2013. The workplan included in the inception report did not correspond to the components described and budgeted in the final, approved version of the Project Document. This error persisted and progress was tracked against this incorrect workplan until the second half of 2018, before it was corrected to correspond with the Project Document components and outputs. Similarly, the M&E plan was not corrected to correspond with the endorsed results framework.
349. There was no ESE safeguards assessment done at inception.
350. Concerns raised at project design stage by PRC and GEF regarding (i) expanding the project focus beyond the ZNEB, (ii) effectively leveraging the knowledge management

⁹⁰ Outputs including the various knowledge resources, physical structures, building codes, etc.

component, and (iii) government / partner buy-in were not fully addressed and integrated into the implementation.

351. As noted earlier in the report, there is no evidence of the project steering committee (PSC) being formally constituted. A PAC and PSC were anticipated at design stage to co-exist as governance structures for the project. The project document had detailed membership for the two entities. These two were collapsed into a single committee – the PSC. This decision was not documented and there is no documented detail of how this decision was interpreted in terms of required representation on the PSC. Based on attendance records, the representation on the PSC was less inclusive. It did not include any representation from government departments, financial institutions, the Bureau of Standards or the hotel and tourism industry, as was planned for the PAC. It also did not include representation by the GEF Focal Point.
352. No documentation is available that shows the formal constitution of the PSC. There is no mandate, Memorandum of Understanding (MOU) or charter that documents the role of the committee or the required membership composition. There is no evidence of letters of appointment or delegation of PSC members by organisations. These would have been helpful to ensure the PSC plays the intended role and to ensure stakeholder commitment and continuity throughout the extended project implementation period.
353. The first record of a PSC meeting is dated 2016.
354. There is no evidence in the inception report that preparatory work (e.g. recruiting of project team members, procurement, or detail planning) had started prior to the signing of the PCA in May 2013. Once the PCA was signed, there were no challenges reported with regards to staff mobilisation. The Project Administrator was appointed mid 2013 and the project manager within a few months.
355. As discussed earlier, the original project workplan did not align with the approved project design (components and budgets). Project implementation proceeded against the incorrect workplan until the second half of 2018 before it was corrected to correspond with the project document components and outputs. This error hampered efficient project implementation for the full duration of the original implementation timeframe.
356. Project preparation and readiness is rated **Moderately Unsatisfactory**.

Quality of Project Management and Supervision

357. The project manager appointed at the start of the project, left and was replaced with a new project manager (PM) midway through the project. This is evident in the completeness of records and the quality of record-keeping⁹¹ that showed significant improvement in the second half of the project. Feedback received suggest that the team did not fully understand the project document and significance of various annexes. This feedback pertained to the current team, but is assumed to have been the case for the initial team also considering (i) the failure to identify and correct issues of misaligned plans, (ii) failure to implement the various aspects of the project document coherently or holistically and (iii) failure to hand over a comprehensive understanding of the requirements to the new PM.
358. The limited descriptions of components (other than the ZNEB), as captured in the project document and discussed in *Section V. B: Quality of Project Design*, was detrimental to project implementation and management.

⁹¹ No record of initial PSC meetings, progress reports for 2015 missing, tracking against an incorrect workplan

359. This is understandable considering that the UWI had not been an executing agent for a GEF funded project before. Even though the project development team was also project implementers, it is clear from the above, as well as feedback during evaluation, that the team did not fully understand the complete set of project documents, project document and all its annexes.
360. Role clarity within the team was not entirely clear. The project had two research principals, a project manager and a project assistant. Due to unforeseen circumstances, handover/changeover to the new project manager was not done as per best practice. This could have been avoided if roles were clearly defined.
361. The PMU managed the successful implementation of two complex demonstration projects, despite various challenges. It also made a remarkable recovery in addressing the workplan error and amending the scope of implementation to align with the approved (CEO Endorsed) project scope.
362. UNEP provided effective support that was welcomed by project team. The working relationship between the PM and task manager was constructive and effective – this is apparent from inputs on draft reports and interview feedback. This is most noticeable since 2018, with a significant improvement in the quality of reporting and engagement. Support and engagement was already covered under earlier sections, including *Section V. G: Monitoring and Reporting* and *Section V. E: Financial Management*. Failure to respond to evolving policy requirements with respect to environmental and social safeguards and gender, are noted as omissions of supervision.
363. The project governance was ineffective as discussed in several instances throughout this report, including in *Table 6. PSC effectiveness as governance structure, Section C: Stakeholders, Section V. D: Effectiveness* and *Section V. F: Efficiency*. Active participation in project oversight by the Jamaican Government was lacking, again noting the failure of any government representatives, including the GEF Focal Point, to participate in the steering committee, The steering committee met only 3 times over 7 years and primarily focused on one aspect of work i.e. the ZNEB (part of Component 2).
364. The quality of project management by the Executing Agency is rated **Moderately Satisfactory**.
365. The quality of project management by the Implementing Agency is rated **Moderately Satisfactory**.
366. Project management and supervision is rated **Moderately Satisfactory**.

Stakeholders Participation and Cooperation

367. Representation on the steering committee did not include the planned involvement of government roleplayers. No evidence is available to show that the detailed stakeholder analysis captured in the project document was reviewed or leveraged. As noted earlier, stakeholder engagement was very targeted. In this respect, workshops, training and communication with targeted stakeholder groups were generally good, although not always consistent. Collaboration with partner organisations and parallel initiatives was not fully effective, with other initiatives implementing planned project activities.
368. There was no stakeholder engagement plan developed at design stage or included for CEO endorsement. There was no MTR done for the project.
369. The project had completed a stakeholder analysis at design stage. This analysis was not actively used or leveraged during implementation, with most of the government entities identified at design stage, not included in the active stakeholder engagement. Stakeholder engagement was designed to be targeted, focusing efforts on influential or key role players in government, government agencies, academia and among building

professionals. At the time of the evaluation, the number of stakeholders who could be identified with active contact details for inclusion in the interviews, were limited. An initial list of 17 stakeholder organisations was prepared based on (i) the stakeholder analysis included in the ProDoc and (ii) stakeholder lists provided by the project. From this list, contact details were not available for four ministries, two participants communicated that they were not available to participate, contact details for one stakeholder were not valid and four contacts did not respond to requests for interviews.

370. Considering the focused communication approach taken by the project, this level of participation from stakeholders is disappointing.
371. Participation by the National Housing Trust and their financial contribution to implementation of the retrofit solution show active engagement by the project team and significant effort to promote stakeholder ownership. The potential impact of this relationship on future housing developments further shows innovation by the project team, although it did not yet translate into the desired outcome.
372. More general communication and awareness was targeted under Component 4. There was no evidence available showing an analysis of the intended or actual target audience, the channels of communication, the likely reach of various channels e.g. newspaper, radio, newsletter, etc.
373. The project did not actively track reach, but a tally of recorded numbers for workshop attendance, unique website visits and various social media platforms suggest that numerous people have engaged with the project learnings and material as follows:
- a) At least 145 people attending workshops where attendee numbers were available.
 - b) The project documented 185 visitors to the ZNEB (as reported in the last PIR). There is no record of who the visitors were, and gender data were not collected for participants.
 - c) The project reported a total of 3,264 unique visits to the website between its launch on 1 May 2016 and the last reporting date, 30 June 2020.
 - d) The project utilised social media to disseminate information, including: Twitter, Instagram, Facebook and YouTube. Followers range between 300 and 450, depending on the platform
374. The project also published at least 56 articles communicating the different milestones and events. The reach of the various news articles was not assessed.
375. Stakeholder participation and cooperation is rated **Moderately Satisfactory**.

Responsiveness to Human Rights and Gender Equality

376. The project was not subject to the gender index. Gender was not reflected anywhere at design stage, in project indicators or budget. While no major failings were noted, there was also no evidence of opportunities used to promote gender and human rights.
377. There was no gender analysis completed during the project design and no gender action plan included in the approved / CEO endorsed project document. The project design was not intentionally gender sensitive or responsive. There is no gender specific data or any evidence at design stage that the impact on women was considered.
378. There were no measures designed or implemented to promote gender mainstreaming or empowerment.

379. The results framework did not include any gender differentiated indicators and the project did not track any gender specific data or gender disaggregated data during the implementation period.
380. This was however not a requirement at the time of design with the UNEP Gender Policy was only implemented in 2015. Nevertheless, Gender was included in the Project Review Committee Review Checklist for new projects (GEF and non GEF) as: 'Gender equality is adequately addressed', since 2010.
381. It is also noted that an undated and unsigned copy of the Project Review Committee (PRC) Review Checklist did recommend that the project incorporate gender sensitive consideration in the design or that data collected for the project is disaggregated by gender. Though the PRC recommendation was not directive (phrased as "Consider..."), it is reasonable to expect the project to have incorporated these suggestions.
382. The project PIRs noted the following with regards to gender mainstreaming: "*While this a GEF-4 project with no explicit gender focus incorporated into project design, the project has strived to incorporate gender considerations into its activities. The design of the net-zero energy building prototype incorporated gender considerations in accordance with international building codes adopted by Jamaica. In addition, the project management unit has complied with the University of West Indies internal codes and standards on gender.*"
383. The PSC had two permanent female representatives out of the seven participating organisations. The JIA and JIE chairpersons rotated annually and was therefore not permanent. The current JIA chairperson is female.
384. Stakeholders were asked to point out any specific value contribution, or harm caused, to women or human rights because of the project. In response, interviewed stakeholders offered only broad / general thoughts (if any) regarding the likely benefits of energy efficiency and energy cost savings to women.
385. The evaluation considered gender representation in the list of interviewees and included questions to test any gender specific considerations or unintentional consequences. Interviewees had not given this topic prior consideration and responses were vague and speculative. The PMU provided information regarding student numbers and the likelihood of women benefitting disproportionately from the development of course material and demonstration facility.
386. Four of the 14 interviews during evaluation were with women, of which two were from the UNEP. Seven of the 13 survey respondents were female.
387. Without a deliberate focus on gender and without any data, the following assumptions and observations are made regarding the possible gender impact.
388. A study by the USAID⁹², published in 2020 noted with respect to the energy sector that "the sector is managed as if it is gender neutral; gender awareness is limited". It however acknowledged that Jamaica, more than many of the Caribbean countries included in the study, had made progress towards improved gender inclusivity, also in the energy sector. This is demonstrated by the recent appointment of a woman as Minister of Energy, the Honourable Fayval Williams and several subsequent appointments she had reportedly made promoting women in senior positions in energy.

⁹² Bonilla, S.G. Perch, L. Adjodha, C. and Avanindra, A. (2020). Caribbean Energy Initiative Regional Gender Analysis, Final Report. 31 December 2020. Available at: https://pdf.usaid.gov/pdf_docs/PA00X8TK.pdf

389. A 2018 research study⁹³ by a University of Calgary student in Canada, noted the significant opportunities for environmental, social and gender benefits associated with the promotion of sustainable energy in the Caribbean. It defines the “Sustainable Energy sector” to incorporate employment that relates to renewable energy, energy efficiency, or job areas that play a part in reducing carbon emissions from their current carbon intensity within a generation, manufacturing or distribution process.
390. In promoting the uptake of EE and RE in buildings in the country, there is **significant opportunity** for the project contribution to benefit women in the following ways:
- a) Energy efficiency and clean energy solutions advance **access to affordable and secure energy supply**. In the longer term, this would mean that income-poor women, female-headed households, and/or women intersecting with other minority-vulnerable groups would be better served with electricity services.
 - b) Findings from the studies noted above suggested that the RE sector has not yet been ‘gendered’. It therefore offers greater (less hindered) **employment opportunity** for women to participate as professionals in the sector or in other roles (including management, administrative, technical, sales and marketing, installation, or manufacturing) throughout the supply chain.
 - c) Women in Jamaica are twice as likely to go to university⁹⁴ and more likely to graduate (women have higher completion rates compared to men throughout the Caribbean). However, they represent only approximately 20.8% of the students in engineering, construction, and manufacturing tertiary education programmes (2011 data, as reported by the UNESCO Institute of Statistics, 2015)⁹⁵. The above-mentioned studies noted that STEM (Science, Technology, Engineering and Mathematics) subjects are associated with male roles and continue to be reflected in the distribution of school subjects taken by girls and boys, despite some efforts to increase the involvement of girls in STEM. The use of the **ZNEB as a Science Academy will expose more female students** – at all levels of education – to the opportunities related to STEM, the building professions, EE and RE.
 - d) Data for 2020 shows the Jamaican population is slightly favoured towards women with 98.53 males per 100 females⁹⁶. It is thus assumed that all **climate, health and environmental benefits** associated with reduced emissions and more sustainable energy use would accrue in the same proportion to the genders.

391. Even though the project was designed before the UNEP Gender Policy, which was only implemented in 2015, Gender was included in the Project Review Committee Review Checklist for new projects (GEF and non GEF) as: ‘Gender equality is adequately addressed’ since 2010. PRC suggested considerations were not reflected anywhere in the design or implementation. The project could have done more to visibly incorporate gender aspects. However, given that this was not a formal requirement at design stage, this aspect is rated **Moderately Unsatisfactory**.

Environmental and Social Safeguards

⁹³ Bourns, R. (2018). Gender Representation In The Caribbean Sustainable Energy Sector (Unpublished report). University of Calgary, Calgary, AB. <http://hdl.handle.net/1880/109765>

⁹⁴ Male gross enrolment ratio in tertiary education (2012) (UNESCO Institute of Statistics, 2015): 20.35%. Female gross enrolment ratio in tertiary education (2012) (UNESCO Institute of Statistics, 2015): 41.73%. Graduates from tertiary education who are female (2009) (UNESCO Institute of Statistics, 2015): 56.4%.

⁹⁵ Gender Profile : Jamaica. (2015). 2015_MacDonaldE_etal_Gender-profile-Jamaica.pdf

⁹⁶ <https://knoema.com/atlas/Jamaica/topics/Demographics/Population/Male-to-female-ratio>

392. There was **no Environmental, Social and Economic (ESE) Risk assessment** or rating completed or **Social and Environmental Management Framework** or **Safeguards plan** prepared during the project design or included in the approved / CEO endorsed project document. ESE risks were not tracked during implementation.
393. The PIRs noted the following regarding Environmental and Social Safeguards management: *"All construction and retrofitting works were undertaken in accordance with Jamaican building codes and standards, in addition to University of West Indies campus regulations. The building works are on a small scale and as such have no perceived negative environmental or social impacts."*
394. It does not reference the retrofit project.
395. The PIRs captured the following for risks identified in the Environmental and Social Safeguards screening: *"N/A, GEF-4 project⁹⁷"*.
396. The project design targets the promotion of sustainable energy use in buildings with an associated reduction in carbon emissions. It also targets improved thermal comfort for building occupants as an intended outcome. Coupled with improved access to affordable, clean and secure energy, the project is expected to contribute to improved living standards for the population of Jamaica. While it sets a target for emissions reductions, the project did not actively track the contribution towards emission reductions. Project implementation delays would also have adversely delayed the anticipated contribution towards emission reductions.
397. As noted under *Section V. D: Effectiveness*, progress was made towards the targeted outcomes and it is reasonable to expect that new building codes and building practices will result in lower and cleaner energy use and therefore lower emissions from buildings.
398. The construction of the greenfield ZNEB was confirmed as having complied with all national requirements and authorisations, including environmental impact (with the process of obtaining such authorisations being part of the delays).
399. The building also considers sustainability more broadly than energy use, incorporating water saving and waste management measures. The building design recommendations note the importance of using locally available material to minimise the environmental footprint. This was confirmed during interviews with the project team as a key learning: to avoid overly sophisticated or too technologically advanced imports. This learning was made based on the need to (i) avoid excessive and unnecessary import costs, (ii) avoid the construction methods being too unfamiliar for the contractors, and (iii) reduce the environmental impact of the building.
400. The building does not have a waste management plan in place for the safe handling and/or recycling of spent batteries and solar panels.
401. Even though, ESE Safeguards were included in PRC Review Checklist in 2011. UNEP Evaluation Office considers that if a project was approved prior to 2013, this criterion should be rated as **"Not Rated"**.

Country Ownership and Driven-ness

402. Country ownership has been limited with no participation by government officials in the PSC and no one championing the project following the dismissal of the Minister of Energy. The anticipated role of the PSC to support implementation⁹⁸, disseminate learnings and facilitate integration into all spheres of government, did not transpire.

⁹⁷ It is not clear why the PIR identifies the project as part of the GEF-4 implementation cycle running from June 2006 to June 2010.

⁹⁸ E.g.: facilitate various approvals, procurement processes, equipment imports.

Multiple parallel projects in the country, led by other actors, proved beneficial in this regard, with a general surge in interest and activity in EE and RE seen throughout the country.

403. The project did benefit from high-level government support at events and workshops. This was remarked on during interviews and is noticeable in media reports for the project.
404. Other PSC members, representing a diverse group of private sector organisations, government agencies and academic institutions, were very supportive of and positive towards the project contribution. These PSC members were also involved in ZNEB design and progress feedback.
405. The university ownership lends credibility to the project and data and findings that will emerge in future. It is therefore possible that the university may be called on for “expert input” that can be used effectively to have findings and recommendations adopted into policy positions or interventions. Various stakeholder feedback suggested this may already be happening.
406. Country ownership considers both government and public agencies. While public agencies were more actively involved than government itself, there was no evidence of a leadership role being taken in terms of strategic guidance of driving change. There is evidence of several (but not all) government and agencies of government endorsing project results, implementing complementary activities, and providing in-kind co-finance contributions.
407. Country Ownership and Driven-ness is rated **Moderately Unsatisfactory**.

Communication and Public Awareness

408. Communication was directly supported by Component 4 that targeted knowledge management, information sharing, learning and collaboration network embedded among key national stakeholders and initiated within the region. The project successfully established an online knowledge platform. It could also demonstrate some success in increasing knowledge among stakeholders regarding net0zero energy and green building opportunities.
409. The success of the communication effort was discussed in *Section V. D: Effectiveness*, under Outcome 7, that set out to embed knowledge management, information sharing, learning, and collaboration networks among key local stakeholders. The discussion for this outcome recognised partial success in this area as confirmed by stakeholder interviews and survey responses. Interest exist among key stakeholders and parallel structures for the region complements the groundwork done by the project. The location of the ZNEB and the planned use of the building as a Science Academy and for offering short courses in related areas of study, suggest there is potential for the facility and learnings of the project to underpin an active community of practice.
410. Survey results, the only available data, suggest that building professionals – a key audience who will be driving the desired change have good awareness of the project’s main messages. The large rollout of EE and RE projects in government facilities and various reported initiatives in the country, similarly suggest that general awareness exist of the benefit of EE and RE in buildings. Media coverage of the project was good. Workshops were well attended. There is no evidence of shared communication efforts with other initiatives. It is not apparent to what extent this project’s communication and awareness efforts have driven change beyond outputs.
411. Communication and Public Awareness: **Moderately Satisfactory**.

Rating for Factors Affecting Performance and Cross-Cutting Issues: Moderately Satisfactory

VI. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

412. The LGGE Promoting Energy Efficiency and Renewable Energy in Buildings in Jamaica project has made important inroads in raising the profile of energy efficiency and renewable energy in buildings in Jamaica.
413. During the implementation period, Jamaica revised its building codes, for the first-time incorporating requirements for EE and Conservation. This also coincided with the adoption of a regional energy efficiency building code, demonstrating a shared, regional intent and priority to reduce the energy use in buildings. [*Corresponding to strategic question 1*]
414. In successfully completing the ZNEB and NHT retrofit demonstration facilities, the project contributed two unique and invaluable assets⁹⁹ to the country and the region. It set out (i) to build the first ZNEB in a tropical environment and (ii) retrofitted a prominent building, demonstrating the benefits to the NHT, primary organisation responsible for public housing in the country. The detailed accompanying design and audit documentation, create an opportunity for scaling and replication.
415. Delivery of these two ambitious construction projects were significantly delayed, caused by project costing, approvals of plans by various authorities, procurement challenges, and importation challenges, among others. Full operation of the buildings have also been delayed by the global COVID pandemic. As a consequence, performance data as a key output from the project, remains pending.
416. Even if the measured energy performance approaches ZNEB status¹⁰⁰, it would be a significant achievement. Performance data, credible evidence of the costs and benefits of clean energy interventions and the proven performance and cost-effectiveness of building for net-zero energy use in a tropical climate, will be crucial to accelerate the adoption of advance EE and RE measures in the country.
417. Stakeholder feedback consistently reinforced the project design hypothesis that a physical demonstration facility with credible evidence of performance will encourage adoption at scale. At this juncture, the reach and impact of the project beyond the two demonstration buildings is uncertain, but significant potential exist if performance data can be collected, analysed and effectively leveraged to influence decision-making and policy setting. [*Corresponding to strategic question 2*]
418. The availability of credible evidence is a unique contribution from the project, intended to unlock uptake and investment at scale. Follow-through on performance monitoring, data collection, analysis, reporting and effective leveraging of this information will be critical. Failure to do so, presents the highest risk to the country transitioning to ZNEBs. [*Corresponding to strategic question 3*]
419. The project faced many challenges. In addition to the two demonstration projects (62% of the budget), it targeted a highly ambitious scope of activities that were poorly defined with a very limited budget. Inconsistencies between the project document and annexes hampered effective implementation.

⁹⁹ Both buildings with accompanying documentation, learnings and recommendations are assets that provide unique opportunities for scaling and replication.

¹⁰⁰ Formal ZNEB status can only be certified if the building consumes less electricity than it produces for 12 consecutive months at 'normal' occupancy levels. This certification has not been done because the building has not been occupied for 12 consecutive months. Yet, even if the building only approaches this status, i.e. energy consumption is marginally more than own production, this would represent a significant achievement from which further improvements can be identified recommendations made.

420. The governance structures designed for the project were not implemented as planned and did not provide the governance, oversight and strategic direction function it was intended. The absence of government representation on the steering committee structure also meant that the project missed out on the high profile government support and sponsorship. The project did not successfully adapt to changes in the implementation environment and collaborate effectively with complementary initiatives to shape its contribution. A suitably constituted and active project steering group/committee would have been the appropriate forum to help navigate and adapt the project contribution.
421. Government stakeholders did not support the project to the extent initially committed, or to the extent anticipated at planning stage. This high-level support would have been crucial to facilitate progress and securing the policy commitments (e.g. 100% building retrofit) the project sought to achieve.

B. Summary of project findings and ratings

422. The table below provides a summary of the ratings and finding discussed in Section V. Overall, the project demonstrates a rating of **Moderately Satisfactory (3.95)**.

Table 24. Summary of project findings and ratings

Criterion	Summary assessment	Rating
Strategic Relevance	The project remains highly relevant to all stakeholders	HS
Alignment to UNEP MTS, POW and Strategic Priorities	Aligned to UNEP priorities	HS
Alignment to UNEP Donor/GEF/Partner strategic priorities	Aligned to GEF priorities	HS
Relevance to global, regional, sub-regional and national environmental priorities	Aligned with global, regional, and national environmental priorities	HS
Complementarity with existing interventions/ Coherence	Complementary, but limited collaboration, with existing interventions	MS
Quality of Project Design	Not supportive of effective project implementation, most notable in the misalignment of key annexes.	MS
Nature of External Context	Multiple implementation challenges resulting from government changeover, devaluation of the currency, oil price fluctuations and the COVID-19 pandemic	MU
Effectiveness	Contributed high quality, unique and invaluable assets for the country and region that can make an important contribution to EE and RE in buildings	MS
Availability of outputs	Ten out of 14 outputs achieved and 3 partially achieved, but not all attributable to the project. Successful delivery of two very significant demonstration projects.	MS
Achievement of project outcomes	Two considered achieved and two partially achieved.	MS
Likelihood of impact	Highly dependent on the availability of performance evidence, demonstrated benefits and proven cost benefit analysis data.	ML
Financial Management	Financial management and reporting are confirmed as sound	S
Adherence to UNEP's financial policies and procedures	Compliant with policies and procedures	S
Completeness of project financial information	Financial data is complete and comprehensive. The project is not able to report spend against components.	S
Communication between finance and project management staff	Communication was good and interactive. Under spend was not flagged.	S

Criterion	Summary assessment	Rating
Efficiency	Two no-cost extensions, doubling the implementation period from 4 to 8 years.	MU
Monitoring and Reporting		MU
Monitoring design and budgeting	Poorly designed M&E plan	HU
Monitoring of project implementation	Hampered by the M&E plan, but disciplined implementation and significant improvement in second half of implementation	MU
Project reporting	Also hampered by the absence of a M&E plan, but comprehensive and complete reporting that showed significant improvement in second half of implementation.	S
Sustainability	Adequate measures in place to ensure sustainability	ML
Socio-political sustainability	Socio-political environment is conducive to sustainability	ML
Financial sustainability	Limited, if any, further reliance on external funding	L
Institutional sustainability	Effective institutionalisation in place	L
Factors Affecting Performance		MS
Preparation and readiness	Significant delays at the start of the project and failure to recognise the misalignment of key project tools	MU
Quality of project management and supervision	Vastly improved in second half of implementation period, managed professionally with high quality, committed staff	MS
- IA		MS
- EA		MS
Stakeholders' participation and cooperation	Targeted stakeholder engagement strategy was not adequately effective.	MS
Responsiveness to human rights and gender equality	No deliberate inclusion or consideration given to either in design or implementation.	MU
Environmental and social safeguards	Not deliberately included in design, but adherence to national requirements and practices.	N/A
Country ownership and driven-ness	Some ownership and driven-ness from the country	MU
Communication and public awareness	Targeted efforts focused on	MS
Overall Project Performance Rating		MS

C. Lessons learned

423. The following lessons are extracted from the evaluation:

Lesson Learned #1:	An active and empowered PSC is critical to maximise project results and must be formally constituted and empowered
Context/comment:	<p>The project experience underscored the importance of an active and empowered steering committee to (i) help steer the full scope of project efforts, (ii) facilitate effective interaction and interfacing with other role players and activities in the country, and (iii) improve the agility with which available resources were utilised or reallocated (i.e. facilitated adaptive management).</p> <p>Discovering that other initiatives have already initiated planned project activities (e.g. those planned under Component 3), not effectively reallocating the available resources and not spending the full budget could all have been better managed by stronger country oversight and guidance.</p>

Lesson Learned #1:	An active and empowered PSC is critical to maximise project results and must be formally constituted and empowered
	<p>Governance structures for projects must be formally constituted, to ensure (i) membership (both permanent and optional) is defined, (ii) stakeholder ownership, and (iii) organisations are aware of, and commit to, their role and responsibility in guiding the project.</p> <p>Document skeletons or templates for the following would be helpful to assist projects with establishing the governance structures and obtaining stakeholder commitment:</p> <ul style="list-style-type: none"> - A terms of reference or charter for the PSC and/or other governance structures that details (i) roles and responsibilities, (ii) membership composition and (iii) frequency of meetings, among others. - Draft nomination letters for organisations to nominate or delegate members to participate in the PSC and/or other governance structures.

Lesson Learned #2:	Quality Assurance at design stage needs to check and recheck consistency across the complete set of documents
Context/comment:	<p>Critical annexes to the project document were not consistent with the final version of the project design. Most notably, this included the workplan and monitoring and evaluation plan. These two plans are essential to support the project contribution against the results framework. Coupled with the limited details captured for project components in the Project Document (except for Component 3, Net Zero Energy demonstration building), this proved severely problematic for implementation.</p> <p>In this instance, it meant the project was implemented and reporting progress against a misaligned workplan for an extended period.</p> <p>It would also be valuable to recheck PRC and GEF Council inputs at inception to ensure high level guidance is adequately incorporated into planning and implementation.</p>

Lesson Learned #3:	A well-designed M&E plan is an important tool for successful implementation and can be supported with a simple “how-to-guide” and basic tools for low-cost M&E implementation
Context/comment:	<p>A well designed and implemented monitoring plan can be a very useful and low-cost tool to gauge progress towards outcomes and results and to inform refinement and direction changes during implementation. The monitoring plan for this project</p>

	<p>offered no support to the project and if it was implemented, it would have been to the detriment of the project.</p> <p>The M&E plan is generally an underutilised tool. Instead of being a useful tool, it is either ignored (as in this case) or it becomes a burden or a distraction from project implementation.</p> <p>A possible solution would be to provide projects with a short “how-to-guide” and standardised tools to help set up baselines, capture data and track developments over time.</p> <p>For instance, simple guidance for (i) tracking attendance (gender, representation, numbers) at events, (ii) requesting feedback from training participants (to track perceived value and application of learnings), (iii) conducting short surveys on a regular basis (to track changes in awareness, understanding, or to assess target audience needs or interest), etc. Excel and Google Forms can be used without incurring additional expenses.</p> <p>Importantly, thinking about and developing baselines at the start of a project, is key as these cannot be recreated after the fact. Data or stakeholder surveys or data collection tools established at the start of the project can be implemented cost-effectively.</p>
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<p>Lesson Learned #4:</p>	<p>Sequencing of project components requires careful consideration</p>
<p>Context/comment:</p>	<p>The sequential sequencing of project components poses a risk for project implementation. Component 1 (technical design) was intended to inform Component 2 (Demonstration projects)¹⁰¹, which in turn was expected to inform Components 3 (Policy and Regulation) and 4 (knowledge sharing / dissemination). Delays with the first components impacted the quality and effectiveness of the latter components. Particularly for large construction projects such as the two demonstration projects, the risk of delays is significant. Notably, the communication and awareness component was initiated and contracts for this service placed and completed, before demonstration data was available – the most important asset that was required for education, awareness and knowledge sharing.</p> <p>It might have been useful to carefully consider the staggering of activities, workplan scheduling, and timing and terms of contracts to better support the demonstration projects. This may have meant initially focusing on data collection, data analysing, and developing communication and training material, to inform communication and knowledge sharing material. It may also</p>

¹⁰¹ Originally defined as components 2 and 3, retrofit solutions and ZNEB.

	<p>have meant contracting communication partners to support milestones and events, rather than for a specified timeframe.</p> <p>A well-presented Theory of Change would have been a useful tool to achieve this.</p>
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Lesson Learned #5:	Project team induction or onboarding at project start and key staff change-overs is essential
Context/comment:	<p>The project team faced challenges with (i) tracking and reporting against the incorrect workplan, (ii) failure to implement the M&E plan (or recognise that the plan was flawed), (iii) underutilisation of the PSC to steer implementation and (iv) engaging stakeholders regarding co-finance. This suggests that the project team would have benefitted from an induction session led by the UNEP (implementing agency) to understand the significance of the final CEO endorsed project document, the intended interlinkages between and importance of the complete set of documents, including annexes and how they are intended to support the project implementation, and the co-financing policy, among others.</p> <p>This is especially true for an executing agency who is a first-time implementer of a GEF funded project and therefore not familiar with standard documentation and practices. The complete CEO endorsement packaged including the ProDoc and all its annexes, the legal instruments, co-finance letters, can be very intimidating.</p> <p>The same would apply for changeovers of key project staff.</p>

Lesson Learned #6:	Financial Management opportunity to monitor and flag significant underspending on budget
Context/comment:	<p>The project significantly underspent on the budget, with 23% of the budget returned to GEF after 8 years of implementation.</p> <p>Better utilisation of the available funding towards project objectives would be a function of project implementation and effective project steering. The project's failure to adapt to a changing environment was already noted.</p> <p>Given the inexperience of the project team with GEF-funded projects and the absence of an active PSC, this project could have benefitted from an early prompt by the FMO. This lesson is not intended to transfer the responsibility for adaptive management to the FMO, but highlighting that the FMO has unique line of sight on project expenditure and potentially recognise a trend of under-expenditure.</p>

	<p>If underspending is identified as a concern, the responsibility for adaptive management would remain with the project i.e. as gains occur in budget lines, during savings in exchange rates or lack of need for that budget line, etc., structured discussions could be held on how to use these additional funds to enhance the impact of the project. These discussions could be held at timely points to fully take advantage of savings.</p> <p>The project's inability to track spend per component was likely also contributing factor to the ineffective utilisation of the available grant funding. Better visibility may have better facilitated reallocation of funding to support targeted results and impacts.</p>
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<p>Lesson Learned #7:</p>	<p>Review stakeholder analysis at inception, firm up stakeholder commitments and make sure they understand their commitments</p>
<p>Context/comment:</p>	<p>The project did not benefit from the level of stakeholder engagement anticipated at design. Many of those stakeholders who had been identified as priority stakeholders (high influence and interest) did not participate in the project, as anticipated.</p> <p>As discussed in Section V. C: Nature of the External Context, the project lost the initial, government support that had been pledged. The direct participation by the Minister of Housing, identified at design stage as project sponsor, did not materialise.</p> <p>It is inevitable that interest may change, as seen in the assessment of the external context for this project. It would be beneficial to revisit the stakeholder analysis at inception (already recommended and common practice for more recent projects) and updating the stakeholder mapping. It would be beneficial to develop a stakeholder engagement plan to target the different categories (in terms of level of interest and influence) of stakeholders (also already introduced for more recent projects).</p> <p>It may also be beneficial to firm up commitments similar to co-finance commitments or obtain formal delegations to the Project Steering Committee as suggested in an earlier Lesson Learned.</p>

<p>Lesson Learned #8:</p>	<p>Proactive utilisation of the time before finalising the PCA to improve project efficiency</p>
<p>Context/comment:</p>	<p>Six months lapsed between project endorsement and finalisation of the PCA. This was noted as a common challenge for projects, especially in the Caribbean.</p> <p>In retrospect, a few activities may have been possible to proceed during this interim period. While this would likely depend on a case-by-case basis, it could be useful to identify a list of potential</p>

	activities that could realistically proceed in the interim to give direction to the EA. These might include: Advertising for key project positions and starting interviews. Initiating subcontract discussions, where relevant, and draft contracts with a provisional clause pending PCA signature.
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D. Recommendations

424. There are only two recommendations at this stage, one year after completion of the project.

425. The first relates to sustainability of the knowledge platform (*Section H: Sustainability*):

Recommendation #1:	Integrate the Build Better Jamaica web platform with the university website
Challenge/problem to be addressed by the recommendation:	The Build Better Jamaica online knowledge platform was set up as a standalone, project website. As a standalone website there is a risk that the project’s knowledge platform, with its wealth of resources, will be lost or inaccessible should funding for maintenance and hosting fall away. Ideally this should be integrated into a university or government website where it can continue as part of the overall online facility or web presence, without requiring a separate, dedicated budget to be maintained and remain live.
Priority Level:	important
Type of Recommendation	Partner Level
Responsibility:	UWI
Proposed implementation time-frame:	Before funding for maintenance and hosting in the current format expires.

426. The second recommendation relates to securing a commitment to monitor, analyse, report and actively disseminate performance data from the two demonstration buildings. The project design was based on the supposition that proven and demonstrated performance evidence will be available to further the adoption of advanced EE and RE measures in buildings. The value of this anticipated data was highlighted by all stakeholders. The project impact thus hinges on the availability of compelling evidence of the benefits of EE, RE and ZNEB to advance large-scale adoption in the country and, potentially, the region.

427. Metering is in place for both demonstration projects. implementation delays and COVID has halted performance monitoring. A commitment was made by the UWI and the NHT has signed a MOU, indicating intent to continue monitoring and reporting.

- Refer discussions in *Section D: Effectiveness*, *Section G: Monitoring and Reporting*, and *Section H: Sustainability*.

Recommendation #2:	Secure the commitment to data collection and dissemination from the two demonstration projects.
Challenge/problem to be addressed by the recommendation:	<p>Ensure proven and demonstrated performance data is available and communicated effectively to secure project impact and results.</p> <p>A proposed way to firm up on the commitment is to encourage post graduate students in Physics, Engineering, Architecture, or construction management to utilise performance data for study purposes. Post graduate studies into ZNEB performance, aspects of ZNEB design, and/or specific solutions or technologies in tropical climatic conditions could support the data collection and analysis.</p>
Priority Level:	Critical
Type of Recommendation	Partner Level
Responsibility:	UWI, in partnership with other academic institutions and in collaboration with beneficiaries of the demonstration projects i.e. NHT and UWI itself.
Proposed implementation time-frame:	As soon as possible

ANNEX I. RESPONSE TO STAKEHOLDER COMMENTS
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Table 25. Response to stakeholder comments received but not (fully) accepted by the reviewers

Page Ref	Stakeholder comment	Evaluator(s) Response	UNEP Evaluation Office Response
57	Suggest rephrasing as: The decision for UWI to be the project executing agency was questionable. (It is not just the PMU; it is the executing agency).	Amended to correctly refer to EA with PMU. Amended this finding to reflect two perspectives encountered during the evaluation. Some stakeholders felt that the project would have faced greater challenges had the Government been the EA and/or hosted the PMU. It is hard to assess as I have not found evidence of other GEF-funded projects that was successfully delivered where the Jamaican government was EA.	
57	Not sure it is highly suitable, particularly considering the further comments in this paragraph. Although UWI were a major project champion, this selection and lack of connection led to major challenges in implementation, including government incorporation of the project work. Also note that the Government did not participate in interviews for the terminal evaluation. I actually think that this is the biggest design flaw. It led to a project that was completely isolated from policy-making. The UWI never managed to bridge that gap.	This is documented in paragraph 149 under the disadvantages of this location. As above, there appear to be conflicting views with some stakeholder feedback suggesting the challenges would have been greater if located within government. I have included an option I tested in one interview, i.e. government as EA and UWI delegated as PMU.	
57	Not sure I agree. Good sustainability of the building. Bad sustainability of the rest.	Changed to read, "would have created." As it was designed, with the various PAC roles and active government participation, this did appear to create excellent conditions for sustainability.	
59	This paragraph is vague. Why were they unrealistic, problematic? Lack of constitution is an issue of project execution, not design. The underlined sentence is also not clear. This is a pretty normal project structure. I think the issue comes back to where the project was housed, in UWI rather than a government agency. Thus UWI, without lack of government	This was discussed comprehensively in Sections III, C and D. Cross-reference and footnote added. At design, both the PAC and PSC were expected to exist with very broad representation, including personal attendance by the Minister of Housing. The PAC was expected to meet monthly. These forums were expected to play a critical role in the dissemination of learnings and integration into the policy and implementation environment. The ProDoc suggested that stakeholder participation had largely been confirmed prior to implementation. It is not clear why this was thought to be the case nor why there was an expectation for such broad representation and active participation at the time of design.	

Page Ref	Stakeholder comment	Evaluator(s) Response	UNEP Evaluation Office Response
	support for the project, always struggled to convene these officials.		
81	<p>In my experience, the executing agencies are not able to recruit project staff until they have the funds in their bank account. I am pretty sure this is the case for UWI. Similarly on procurement.</p> <p>I agree on detailed planning, although this needs to be done by the project manager, as the person who has ownership of the project. So until this person is recruited it is hard to advance. And they are only recruited once the project funds are with the executing agency.</p> <p>Unfortunately this gap happens often in GEF projects, and particularly with Caribbean countries.</p>	<p>These suggestions were based on input during interviews and informal enquiries regarding possible actions that could be taken pending PCA signature.</p> <p>My understanding was that even if appointments are not made, it should (theoretically) be possible to advertise for positions and start the process of interviews – these typically take 3 or more months. Making headway with the recruitment of the PM would be especially relevant given the observation regarding detailed planning pending this appointment.</p> <p>I have also seen instances where agreements with service providers were drawn up with the understanding that it will only take effect when the PCA is in place.</p> <p>Since this pre-PCA timeframe is not included under the efficiency rating, these are observations and suggestions and not intended to “mark down” the project.</p> <p>If this is a common occurrence, then perhaps proactively identifying potential activities that can realistically proceed in the interim is an opportunity for improved efficiency</p>	
82	Note previous comment on exchange rate.	<p>This finding holds.</p> <p>Given that the project had not implemented all components of the project and had not delivered all outputs and outcomes, these funds could have, and should have, been spent towards the project objective. Effective project leadership (PSC) should have adapted to the currency windfall and found ways to deploy the funding. It is my impression that the greatest missed opportunities lie in clearly articulating learnings that could be included in future revisions of the building codes (low cost, high impact interventions that could feasible be prescribed for building practice), leveraging the regional networks and active collaboration with parallel activities.</p> <p>Despite the extra funding, the project did not purchase a copy of the building standard to review and pre-emptively prepare input into future revisions.</p>	
83	<p><i>With respect to the Monitoring design and budgeting.</i></p> <p>I think this is "unsatisfactory". Please note table 2 of the project document, which provides a list of monitoring activities which were specified during project design and observed to.</p>	<p>Table 2 of the ProDoc lists the standard GEF M&E requirements. This is noted and the Evaluation report has been updated to acknowledge these (refer new paragraph 249).</p> <p>This is however not a monitoring plan and did not support the monitoring and tracking of progress against indicators.</p> <p>The finding regarding the design and budget of the M&E plan is retained as highly unsatisfactory based on the description for this sub-component:</p> <p><i>“At project launch/mobilisation no monitoring plan exists (i.e. only the logical framework and/or details of UNEP /donor reporting requirements exist)”</i></p>	

Page Ref	Stakeholder comment	Evaluator(s) Response	UNEP Evaluation Office Response
		None of the requirements for the next rating are met.	
83	<p><i>With respect to the M&E Plan indicators, baselines and targets not corresponding.</i></p> <p>As per table 2 of the project document.</p>	<p>As above.</p> <p>Paragraph 302 notes that it followed standard reporting cycles.</p> <p>Considering that reporting was done for 5 years against the wrong workplan and incorrect project activities, this will not be amended.</p>	
85	<p>Add the salary of the project manager for preparing the annual PIR and half-yearly reports, for organizing the steering committee meetings, for participating in the fortnightly calls with the UNEP Task manager.</p>	<p>Amended to reflect the spending on monitoring in adherence to standard UNEP / donor reporting requirements.</p> <p>Please note that the rating criterion descriptions for monitoring of project implementation requires that a basic M&E plan is in place that covers (i) all indicators appropriately in the logical framework, (ii) data collection methods, (iii) data collection frequency, and (iv) data collection frequency that is appropriate for the indicator. This is required over and above the standard UNEP / donor reporting requirements.</p> <p>It requires a completed workplan, baseline data to have been developed, complete monitoring data against these indicators.</p> <p>It also calls for disaggregation by gender, as also requested by the PRC.</p> <p>Again here, the project performance straddles the descriptions under Moderately Unsatisfactory and Satisfactory, but do not meet enough of the criteria for the higher rating.</p>	
85 and 86	<p>I think this is satisfactory. All reporting is complete. This is outstanding result and highlights the organization of both the executing agency (especially the project manager) and the implementing agency (UNEP) side.</p>	<p>This rating is not straight forward, as the performance straddles the criterion description for highly-satisfactory (based on level of completeness) and moderately unsatisfactory (no disaggregation and reporting against incorrect indicators).</p> <p>Paragraph 269 of the TE acknowledges the comprehensive reporting records and the improved quality of reporting. It is impossible to overlook the extended period during which the project reported against an incorrect plan and results framework.</p> <p>However, taking this feedback under consideration and acknowledging the quality of recent reporting and the significance of having complete records, the rating for Project reporting is amended to "Satisfactory".</p> <p>The overall rating for the category is automatically calculated from the three sub-categories. As per the above, the performance ratings for design and implementation penalises the project and accordingly the overall rating remains at Moderately Unsatisfactory.</p>	

Page Ref	Stakeholder comment	Evaluator(s) Response	UNEP Evaluation Office Response
92 and 93	Are paragraphs 336 to 338 needed?	<p><i>Please note revised paragraph numbers: 388–390.</i></p> <p>These paragraphs are not needed. It was added in response to earlier input from the Evaluation Office and was intended to show that even if the project did not deliberately target women or vulnerable groups, it would have made an indirect contribution.</p>	
93	I still think this is a bit tough as gender was not a requirement at the time of project design...	It was a direct request of the PRC that was not attended to. Considering that policies are not backfitted, the rating has been amended to Moderately Unsatisfactory.	
95	I disagree! The absence of government involvement highlighted to me a significant lack of country ownership. Also, as you noted in para 368.	The Country ownership rating also considers public agencies, not only government itself. The rating was however reviewed against the rating criteria and amended to Moderately Unsatisfactory.	
101	<p>In practice I am not sure how we operationalize this. If a project contract costs less than that estimated during project design, is that underspending?</p> <p>If a staff member is hired for 9 months instead of 12 months, is that underspending?</p> <p>If the costs of goods and services is less than estimated during project design, is that underspending?</p> <p>In this project, the fact that there were two project extensions highlights that there was an understanding by all parties of underspending occurring. i.e. if there had been no underspending the project would not have been extended (twice).</p> <p>Maybe another approach is to enhance adaptive management. i.e. as gains occur in budget lines, during savings in exchange rates or lack of need for that budget line, etc., structured discussions could be held on how to use these additional funds to enhance the impact of the project. These discussions could be held at timely points to fully take advantage of savings.</p>	<p>As before, if the project had delivered on all outputs and outcomes and the under-expenditure was solely ascribed to the devaluation of the local currency, this question would possibly hold.</p> <p>Even in such a scenario, it is highly likely that parallel activities can be identified to enhance the project contribution and the targeted impact leveraging the available cash funding. Project extensions are common and not commonly associated with under-expenditure of this magnitude.</p> <p>Please note the reworded lesson. This is not intended to transfer responsibility for adaptive management to the FMO, but highlighting that the FMO has a unique line of sight and can potentially recognise significant underspend early.</p> <p>The suggestion regarding stronger adaptive management is noted and included.</p>	

ANNEX II. PEOPLE CONSULTED DURING THE EVALUATION

Table 26. People consulted during the Evaluation

Organisation	Name	Position	Gender
Executing Agency	Professor Anthony Clayton		Male
Executing Agency	Kevin Rodriguez	Project manager	Male
University of the West Indies	Dr Andre Coy		Male
University of the West Indies	Professor Michael Taylor		Male
Bureau of Standards (BoS)	Richard Lawrence		Male
Jamaica Institution of Engineers (JIE)	Engr Dwight Ricketts	Current chairperson	Male
Jamaica Institution of Engineers (JIE)	Engr Marvin Campbell	Past chairperson	Male
Jamaica Institution of Architects (JIA)	Arch. Camille Douglas-Stephenson	Current chairperson	Female
Jamaica Public Service Company Ltd (JPSCO)	George Scarlett	Director Inventory and Logistics	Male
The Institute of Sustainable Energy, University of Technology, Jamaica (UTech)	Dr. Ruth H. Potopshing	Institute of Sustainable Energy, University of Technology, Jamaica (Retired)	Female
Implementing agency (UNEP)	Mr Asher Lessels	UNEP Task Manager	Male
Implementing agency (UNEP)	Leena Darlington	Previous Climate Mitigation Unit Fund Management Officer	Female
Implementing agency (UNEP)	Fatma Twahir	Climate Mitigation Unit Fund Management Officer	Female
Implementing agency (UNEP)	Vincent Sweeney	UNEP Head of the Caribbean Sub-regional Office	Male

Table 27. Stakeholders unavailable for an interview during the Evaluation

Organisation	Name	Project interest	Gender
University of the West Indies	Dr Randy Koon Koon	Beneficiary or recipient of ZNEB	Male
Office of Disaster Preparedness and Emergency Management (ODPEM)	Pauline Brown	PSC member and beneficiary	Female
GEF Focal Point - The Ministry of Water, Land, Environment and Climate Change (MWLECC)	Gillian Guthrie	GEF Focal Point (not available until mid-April 2022)	Female
National Housing Trust	Donald Moore	Direct beneficiary	Male
CCREEE	Dr Gary Jackson	Regional perspective	Male
CARICOM Secretariat	Dr Devon Gardner	Regional perspective	Male
The Scientific Research Council (SRC)	Dr. Cliff Riley	PSC (couldn't be contacted, email address no longer valid)	Male

Organisation	Name	Project interest	Gender
Caribbean Academy of Sciences, Jamaica (CASJ)	Prof. Robert Lancashire	PSC and project partner (not available due to ill health)	Male

Contacts could not be found for four (4) organisations that were initially identified for inclusion in the consultation process.

ANNEX III. KEY DOCUMENTS CONSULTED

Project planning and reporting documents

- Project Document: Jamaica Project Document Final_10.09.2012.pdf
- Project Document Annexes: Jamaica Appendices 1-14_10.09.2012.pdf
- GEF CEO Endorsement Request: GEF - Request for CEO Endorsement-Approval Document (July 2012)
- Project Cooperation Agreement with Executing Agency (unsigned): PCA _ EA signature-1.pdf (approximate date 2013)
- Review of the project design by the Scientific and technical Advisory Panel: STAPReview.pdf (May 2010)
- Project Identification Form (PIF): CC 4167 Jamaica PIF.pdf (January 2010)
- Inception Report: Project Inception Report (Jamaica EE and RE in Buildings).docx (November 2013)
- Memorandum of Understanding with National Housing Trust: Executed NHT-UWI MoU.pdf (2015)
- **Progress reports** for the following periods:
 - 2013: Oct – Dec
 - 2014: Oct – Dec
 - 2015: Jan – Mar and Apr to Jun
 - 2016: Jan – Mar
 - 2017: Not available
 - 2018: July – Dec
 - 2019: July – Dec
- **PIRs** for the following financial years:
 - 2014: July 2013 – June 2014.
 - 2015: Not available
 - 2016: July 2015 – June 2016
 - 2017: July 2016 – June 2017
 - 2018: July 2017 – June 2018
 - 2019: July 2018 – June 2019
 - 2020: July 2019 – June 2020
- Final Report / Completion report, 2020 with accompanying evidence of deliverables
- Financial management and related documents, including:
 - Cash advances (various)
 - Expenditure reports / logs (Annual 2013 – 2020),
 - Budget with accompanying workplan and procurement plan
 - Budget revisions (two formal revisions, final dated 24 April 2019),
 - Inventory of non-expendable equipment (various)

Project outputs – Overall

- Memorandum of Understanding with National Housing Trust: Executed NHT-UWI MoU.pdf (2015)
- Steering Committee meeting records: May 2016, December 2017 and May 2019.

Note the following component numbers correspond with the original numbering.

Project outputs work package 1¹⁰²: Component 1: Technical design

Output 1.1 Climatically relevant designs and energy efficient technological building solutions, practices, standards, and codes developed by local and regional professionals for testing.

- Activity 1.1 Climate relevant Designs: NZEB - Final Design Report – Complete (Complete report with accompanying components, draft components, drawings, and drafts). October 2021.
- IDB. 2013. Developing Design Concepts for Climate Change Resilient Buildings. Developed in collaboration with USI Institute for Sustainable Development. IDB Project No.: ATN/OC-12813-JA

Output 1.2: Detailed assessment of energy demand patterns and associated opportunities for energy savings in buildings in (sub)tropical regions.

- Activity 1.2. Assessment of Energy Demand. UWI_20200701_Energy Demand Assessment Report_FINAL. March 2020.

Output 1.3: General design of highly innovative core building systems, components, and solutions.

- Activity 1.3. Design of system and components. Sign boards. 8 posters or sign boards with messaging related to energy savings.
- Activity 1.4. Tropical and Sub-tropical Standards. Caribbean Guide for Energy Efficient Building Design. GreenBuilding_BestPractices_2018 (1) - KMR.pdf

Project outputs work package 2: Component 2: Retrofit Solutions

- Activity 2.1 - Retrofit Assess. NHT building retrofit Design report, Presentation, general retrofit recommendations brochure, prioritisation of opportunities.
- Activity 2.2 – Demonstrations. Workshop reports and presentations for Workshop 4 (April 2019) and 5 (November 2019).
- Activity 2.3 – Awareness (Financial Incentives Brochure.pdf; LGGE Energy Retrofit Brochure 2020 Jan 28 – FINAL; Workshop reports for workshops 1 to 6)
- Activity 2.4 – Emergency shelter standards (2019.05.02 - Shelter Criteria and Inspection Form 2016.pdf; Shelters and Shelter Management Guide - USAID.pdf; SPHERE Chap. 4- shelter and NFIs.pdf)¹⁰³
- GoJ. 2020. Ministry of Science, energy and Technology Sectoral Presentation, 2020/2021. Presented by the Minister of SET on June 17 2020.

Project outputs work package 3: Component 3: Zero-Net Energy Demonstration Building

- Activity 3.1 – NZEB Design

¹⁰² Work packages numbered according to original project design (not revised Theory of Change) and activities according to original workplan.

¹⁰³ Relevance to the project is not clear.

- NZEB Prototype was constructed at 13 Gibraltar Camp Rd, Mona, UWI Campus. Complete set of final drawings and cover sheet describing documents / drawings contained as the "Basis of Design" Document. Climate relevant Designs: NZEB - Final Design Report – Complete (Complete report with accompanying components, draft sections, drawings and drafts). October 2021.
 - Media announcement on passing of Building Bill, November 2017. 2017.11.08 - House Approves Building Bill - JIS.pdf;
 - Minister media statement regarding Building Act, December 2017. 2017.12.09 - JamaicaObserver.com - Mayor of Kgn highlights Import of Building Act.pdf;
 - Media article about passing of Building Act, January 2018. 2018.01.27 - Senate passes Building Act with 30 amendments.pdf;
 - Media announcement regarding launch of a Guide for energy use in public buildings, February 2018. 2018.02.22 - Guide Launched to Reduce Public-Sector Energy Use - JIS.pdf;
 - New standards for electrical appliances introduced by Jamaica Bureau of Standards, March 2018. 2018.03.04 - Jamaica Observer - BSJ New Standard for electrical appliances.pdf
- Activity 3.2 – NZEB Performance. Monthly energy reports and smart panel data¹⁰⁴.
 - Activity 3.3 – Awareness. List of media articles directly and indirectly related to the project dating from July 2015 to November 2019.
 - Activity 3.4 – Handover of NZEB to University. Confirmation letter from UWI accepting full responsibility for the operations and maintenance of the NZEB.

Project outputs work package 4: Component 4: Policy and Regulatory Framework

- Activity 4.1 – Review and Assessment
- Activity 4.2 – Building Codes and Regulations
- Activity 4.3 – Development of Testing Facilities
- Activity 4.4 – Assessment of existing testing Facilities
- The Building Act, 2018.
<https://japarliament.gov.jm/attachments/article/339/The%20Building%20Act.%202018.pdf>
- *The New Building Code and its Effect on the Environment*, Richard Lawrence Bureau of Standards Jamaica, Manager Testing and Industrial Services Branch presentation at the JDA/JMA Real Estate Development webinar, 13 May 2021.

Project outputs work package 5: Component 5: Dissemination of Information

- BuildBetter Jamaica website
- Multiple publications, videos, interviews, presentations and workshop proceedings available on the BuildBetter Jamaica website
- Multiple advertorials and media articles (20+ dating from 2015 to 2019)
- Project sign boards and brochures

¹⁰⁴ Incomplete records

- Social media accounts (Twitter, Instagram, YouTube)
- Workshop material
- Presentations made by the project team at various events

Previous evaluations

- *Draft summary of audit findings*. 2019. Audit of management of partnerships at UNEP: University of West Indies (UWI). Prepared by the office of internal oversight services, Internal Audit Division
- UNEP Mission report for January 2018

Reference documents

- 2015_10_Caribbean_Grid Emission_04.pdf
- ETI-Energy_snapshot_Jamaica_FY20.pdf
- GEF Overview of GEF-4 Focal Areas Strategic Objectives (gefsp.pdf)
- IGES_GRID_EF_v10.12_20220228.xlsx
- Energy for Sustainable Development (ESD) in Caribbean Buildings. ProjectImplementationReportPIR_4171_2019_PIR_UNEP_Caribbean.doc
- Deployment of Renewable Energy and Improvement of Energy Efficiency in the Public Sector, GEF Project ID: 5843. Terminal Evaluation Report, June 2021.
- Gender Profile: Jamaica. Commonwealth of Learning CC BY SA, April 2015
- The-Building-Code-and-the-Environment-by-the-Jamaica-Bureau-of-Standards-May-2021
- World Bank Energy data (World bank data API_EG.USE.ELEC.KH.PC_DS2_en_excel_v2_3159079.xlsx)
- Gender Representation in the Caribbean Sustainable Energy Sector (2018_Bourns_capstone.pdf)
- SITAN-Gender-Disparities-in-Jamaica-2007.pdf
- CARIBBEAN ENERGY INITIATIVE REGIONAL GENDER ANALYSIS FINAL REPORT, 2020
- -UNEP Programme Performance Report, 2013-2014PPR-en.pdf
- Climate Investment Funds (CIF).(2017) GENDER AND RENEWABLE ENERGY: ENTRY POINTS FOR WOMEN'S LIVELIHOODS AND EMPLOYMENT

ANNEX IV. EVALUATION FRAMEWORK

TOR Ref	Main Evaluation Criteria / Questions	Evaluation indicators	Sources / means of verification
Key strategic questions from the TOR			
TOR 9 (a)	To what degree of success has the project facilitated energy efficiency policies for the transformation to a low-emission building sector in Jamaica.	Policies, codes and / or standards adopted or revised.	Interviews / surveys with responsible government entities including Bureau of Standards (BoS) Revised standards and codes
TOR 9 (b)	The project has created evidence of affordable and effective energy efficiency measures for buildings, addressing barriers held by key stakeholders on the technological and economic viability of such technologies in Jamaica. Which opportunities exist, or have already been set in motion, that are likely to scale-up project outcomes within Jamaica and/or have a catalytic ¹⁰⁵ effect to other nations in the Caribbean?	Qualitative. Any evidence of adoption outside of the initial scope of the project (e.g. NHT) and/or reach outside the initial geographic boundary.	Interview / survey question to all stakeholders. Any evidence of broader reach, interest, scaling and/or adoption e.g. discussions, forums and/or processes set in motion.
TOR 9 (c)	Based on the analysis of the Theory of Change at evaluation, what factors still present the highest risks to success in transitioning to net zero energy buildings in Jamaica post-project?	Qualitative. Test drivers and assumptions (Qualitative)	Interviews with project team and all stakeholders
TOR 9 (d)	Has the evaluation identified any unintended results (positive or negative) deriving from the project's implementation, and if so, what was it and how might it affect the intended project Impact?	Qualitative. Any evidence found of unintended consequences (positive or negative) not anticipated by the project. Examples may include suppliers of inefficient products, new interest in field of study, new demand for green building registrations, impact on gender	Interviews with project team and all stakeholders; any media exposure; review of project documentation (progress reports, workshop reports, etc)

¹⁰⁵ A catalytic effect is one in which desired changes take place beyond the initial scope of a project (i.e. the take up of change is faster than initially expected or change is taken up in areas/sectors or by groups, outside the project's initial design). Scaling up refers to an initiative, or one of its components, being adopted on a much larger scale, but in a very similar context (e.g. a small scale, localized, pilot being adopted at a larger, perhaps national, scale). Replication refers more to approaches being repeated or lessons being explicitly applied in new/different contexts e.g. other geographic areas, different target groups etc. Effective replication typically requires some form of revision or adaptation to the new context. It is possible to replicate at either the same or a different scale.

TOR Ref	Main Evaluation Criteria / Questions	Evaluation indicators	Sources / means of verification
		or other minority groups, waste stream or recycling requirements, input to a national cooling plan for the country, etc. Any evidence of gender or social benefits, even if not anticipated at design?	
A. Strategic Relevance: The extent to which the activity is suited to the priorities and policies of the target group, recipient and donor?			
Para 37	Alignment to Donor/GEF/Partner Strategic Priorities Alignment with the sponsoring parties' priorities? Bali Strategic Plan? South-South Cooperation? GEF? What was the scale and scope of the contributions to any of these?	Confirmation against past and updated priorities and strategies; Evidence of cooperation / networking / information sharing with region and other similar climatic regions – most notably related GEF-UNEP projects.	Desktop review (already confirmed for design phase). Project documentation and all relevant frameworks and reports; interviews with country stakeholders; interviews with relevant UNEP and/or GEF interfaces.
Para 38	Relevance to Global, Regional, Sub-regional and National Environmental Priorities. Assess alignment with (i) SDGs and Agenda 2030, (ii) stated environmental concerns and needs of the countries, sub-regions or regions where it is being implemented, (iii) Nationally Appropriate Mitigation Action (NAMA) plans or regional agreements; and (iv) current policy priority to leave no one behind.	Confirm alignment with (i) SDGs and Agenda 2030, (ii) stated environmental concerns and needs of the countries, sub-regions or regions where it is being implemented, (iii) Nationally Appropriate Mitigation Action (NAMA) plans or regional agreements; and (iv) current policy priority to leave no one behind.	Desktop review (already partly confirmed). Project documentation and all relevant frameworks and reports; interviews with country stakeholders; interviews with relevant UNEP and Project team.
Para 39	Complementary with existing Interventions?	Confirm against past and recently introduced interventions for synergies and alignment. Include in the assessment linkages with any UN Development Assistance Frameworks or One UN programming and/or where the	Desktop review (already confirmed for design phase). Interviews with country stakeholders and project team. Evidence of synergies and collaboration (e.g. GIZ training)

TOR Ref	Main Evaluation Criteria / Questions	Evaluation indicators	Sources / means of verification
		UN's comparative advantage had been particularly well applied (e.g. leveraging work done by EE in Buildings in East Africa project during parallel timeframe up to 2018).	
B. Quality of Project Design			
Para 40	How satisfactory was the project design? Were any GEFSEC and PRC responses (if any) adequately addressed, or did concerns materialize?	Assessment / rating template completed. Any further insights gained during the evaluation with specific consideration of: - Stakeholder participation and cooperation; - Responsiveness to human rights and gender equity.	Project documentation and all relevant frameworks and reports; interviews with project team
C. Nature of External Context			
Para 41	Where there any unforeseen developments that impacted the project success?	None anticipated or documented at design phase. Mention made of multiple changeovers in government during implementation period – confirm and clarify extent of impact.	Interviews with project team, Verification through interviews with stakeholder and supporting information available in public domain, as relevant.
D. Effectiveness: To what extent have the expected outcomes and objectives of the project been achieved?			
Para 42	i. <u>Availability of Outputs</u> – How successful was the project in producing the programmed outputs and delivery targets / milestones. Where there any formal modifications / revisions made during the project implementation phase?	Evidence of programmed activities such as draft & adopted building codes, reports, publications, trainings, demonstration projects as per the indicators defined for the 18 outputs.	Interviews with project team (primarily) and partners; Review of related documentation and annual, quarterly and final project reports.

TOR Ref	Main Evaluation Criteria / Questions	Evaluation indicators	Sources / means of verification
		<p>Challenges identified with completing deliverables and measures taken to mitigate.</p> <p>Evidence of agility shown by PM and team to navigate challenges.</p> <p>Impact of challenges with recruiting and retaining a PM</p> <p>Occurrence of change in project design/ implementation approach (i.e. restructuring) when needed to improve project efficiency</p>	
<p>Para. 43</p>	<p>ii. <u>Achievement of Project Outcomes</u> – How successful was the project interventions and implementation in achieving the intended outcomes not within the control of the team. What evidence supports attribution of success to UNEP's interventions?</p> <p>Also prompt around cross-cutting themes in the discussion i.e. factors and processes affecting project performance:</p> <p>(i) preparation and readiness,</p> <p>(ii) quality of project management and supervision, (iii) stakeholder participation and cooperation,</p> <p>(iv) responsiveness to human rights and gender equity,</p> <p>(v) communication and public awareness.</p>	<p>Adoption of building codes, standards and/or regulations [Y/N].</p> <p>Qualitative. Evidence of an uptake of advanced EE and RE in development and renovation of buildings in Jamaica and Caribbean.</p> <p>Number of and trend in GBC certifications.</p> <p>Evidence of increased investment in EE and RE supported by any data e.g. market trends, sales growth, increased number of active suppliers, number of systems tested.</p> <p>National retrofitting plan in place [Y/N];</p> <p>Quality supervision system and functional test facilities established.</p>	<p>Interviews with project team and partners / PAC participants.</p> <p>Interviews with stakeholders regarding green building and housing developments (GBC and NHT).</p> <p>Review of all related documentation and annual and quarterly reports.</p> <p>Survey of building professionals outside of PAC to test reach and influence of the project.</p> <p>Potential survey of regional representatives to test reach outside Jamaica.</p>

TOR Ref	Main Evaluation Criteria / Questions	Evaluation indicators	Sources / means of verification
		<p>Evidence of learnings integrated into various spheres of policy, planning, academic teaching and research programmes as well as building practices.</p> <p>Evidence of knowledge management, information sharing, learning, and collaboration network embedded among key stakeholders e.g. community of practice or other forum or platform for knowledge exchange of collaboration established; sub-committee or regular slot on pre-existing platform; annual conference initiated; cross border work groups; etc.</p>	
Para. 44 - 47	<p>iii. <u>Likelihood of Impact</u> - How likely are the positive, intended impacts to occur? To what extent did the project catalyse, scale up or replicate positive impacts, such that they would have a long-term effect? (As above, also prompt around cross-cutting themes in the discussion).</p>	<p>Any stated or indicated intent to pursue further improvements to codes, standards or regulations / a goal for net-zero energy buildings being considered;</p> <p>Evidence of continued application and/or likely large-scale uptake by building professionals (consider feedback regarding experience, satisfaction, perceived benefits, intent to grow adoption);</p> <p>Evidence of market growth for EE and RE products;</p> <p>Cost of available solutions (whether competitive) and cost trends;</p>	<p>Interviews with project team and partners;</p> <p>Survey of building professionals (as above) and regional representatives (as above);</p> <p>Review of all related documentation and annual, quarterly and MTR reports.</p>

TOR Ref	Main Evaluation Criteria / Questions	Evaluation indicators	Sources / means of verification
		Any evidence of complementary / concerted initiatives towards advancing EE and RE in buildings e.g. available financing, green loans, etc. Any evidence of reach beyond the borders of Jamaica in terms of established capacity and/or adoption of EE and RE. Assumptions and drivers for achieving the impacts tested.	
E. Financial Management: Completeness of information and communication between financial and project management staff			
Para 48	ADHERENCE, COMPLETENESS & COMMUNICATION – Are all records available. How much of the funds (from each source) were spent, and for which outputs? Compared to budget? How was co-funding released? Were the funds administered cost-effectively? How effectively did the Project & Task Managers & Fund Management Officer exchange information and adapt as needed to changes? Did any communication issues affect the quality of the project performance? (Also consider Crosscutting Factors and Processes)	Availability and quality of financial and progress reports Timelines and adequacy of reporting provided Level of discrepancy between planned and utilized financial expenditures Planned vs. actual funds leveraged. Agility in responding to delays. Timing of advances and expenditure. Quality and regularity of reporting and communication Efficiency of communication and processing of funding reallocations for activities / outputs if needed.	Audits, Progress Reports, financial reports, Interviews with PM and financial team members / officers at UNEP
F. Efficiency: Extent to which the project delivered maximum results from the given resources			

TOR Ref	Main Evaluation Criteria / Questions	Evaluation indicators	Sources / means of verification
Para. 49 - 51	<p>How cost effective was the project? Was it executed in a timely manner? How were delays managed to minimize impacts? Were events sequenced efficiently?</p> <p>Could the project extension have been avoided? What was its cost impact? Were any cost-saving measures introduced?</p> <p>Were any efforts made during project implementation to make use of/build upon pre-existing institutions, agreements and partnerships, data sources, synergies and complementarities with other initiatives, programmes and projects etc. to increase project efficiency.</p> <p>Was anything done to minimise the UNEPs environmental footprint?</p> <p>What was the impact of no-cost extensions on partners / implementing parties?</p>	<p>Adequacy of project choices in view of existing context, infrastructure and cost?</p> <p>Cost associated with delivery mechanism and management structure compared to alternatives?</p> <p>Efforts for coordinated actions with other regional or national relevant initiatives</p>	<p>Progress Reports, financial reports, comparative project and carbon costs</p> <p>Interviews with PM and financial team members / officers at UNEP.</p>
G. Monitoring and reporting			
Para 52	(i) <u>Monitoring design and budgeting</u> – was the M&E plan clear, SMART, adequate. Was there a budget allocation made for M&V	Monitoring plan; Effective tracking tool progress; adequacy of budget allocation; budget spend; challenges with plan and/or budget.	Monitoring reports, Interviews with PM and financial team members / officers at UNEP
Para 53	(ii) <u>Monitoring of project implementation</u> - Was the monitoring system operating? Did it facilitate timely tracking? Were allocated funds expended for monitoring?	Submissions of reports timeous and complete with respect to requirements of respective monitoring plans. Expenditures & payments align with approved budgets.	ProDoc, All relevant reporting, GEF tracking tool, Interviews with project team
Para 54	(iii) <u>Project reporting</u> - How regularly and completely were project reports and tracking tools completed and submitted?	Quality of results-based management reporting (progress reporting, monitoring and evaluation) Quality of project documentation and records	Reports, budgets, financial statements and correspondences. Specifically reports uploaded to Anubis, to be shared by the Evaluation Manager. If required, interviews with relevant team members.

TOR Ref	Main Evaluation Criteria / Questions	Evaluation indicators	Sources / means of verification
		Timelines and adequacy of reporting provided Dated reports; signed (or email) acknowledgements of receipt of reports. Completeness of reports, per agreed-upon requirements.	
H. Sustainability: Probability of direct outcomes being maintained and developed after close of intervention			
Para 56	(i) SOCIO-POLITICAL SUSTAINABILITY – to what extent do social and political factors support the continuation and further development of the outcomes in terms of (a) level of ownership, interest and commitment to take the project forward, and (b) whether individual capacity development efforts are likely to be sustained.	Energy efficient building policies implemented and likely to be implemented (confirm extent of commitment). Evidence of developments (especially government) adopting clean energy practices into designs and construction Any additional institutional capacity for green buildings established? Quality / evidence of commitment (i.e. level and resource allocation) Quality / evidence of compelling EE and economic benefits or potential demonstrated Evidence of any innovative financial measures or incentives introduced.	Interviews with project team and country partners; Review of all related documentation and annual, quarterly and final project reports.
Para 58	(ii) FINANCIAL – Which, if any, outcomes require additional funding to be sustained? Were financial risks analyzed and adequately addressed in proposals and plans?	Identified outcomes requiring additional funding to be sustained	Interviews with project team and stakeholders; Budgets and reports
Para 59	(iii) INSTITUTIONAL – To what extent is sustainability dependent on institutional frameworks and governance	Adequacy of capacity to pursue, implement and enforce new policies across all areas of	Interviews with project team and country partners; Review of all related documentation and annual, quarterly and final project reports.

TOR Ref	Main Evaluation Criteria / Questions	Evaluation indicators	Sources / means of verification
		<p>government and government building projects.</p> <p>Quality/ evidence of commitment (i.e. level and resource allocation) to the above.</p> <p>Structures created or in place to support this implementation e.g. workgroup, forum?</p> <p>Evidence of developments (especially government) adopting EE and RE building practices into designs and construction</p> <p>Any additional institutional capacity established to drive EE and RE in buildings?</p>	

ANNEX V. QUALITY OF PROJECT DESIGN

Table 28. Amended scoring for the quality of project design.

	SECTION	RATING (1-6)	WEIGHTING	TOTAL (Rating x Weighting/10)
A	Operating Context	3	0.4	0.12
B	Project Preparation	4	1.2	0.48
C	Strategic Relevance	5	0.8	0.4
D	Intended Results and Causality	3	1.6	0.48
E	Logical Framework and Monitoring	1	0.8	0.08
F	Governance and Supervision Arrangements	2.5	0.4	0.1
G	Partnerships	3	0.8	0.24
H	Learning, Communication and Outreach	5	0.4	0.2
I	Financial Planning / Budgeting	5	0.4	0.2
J	Efficiency	5	0.8	0.4
K	Risk identification and Social Safeguards	3	0.8	0.24
L	Sustainability / Replication and Catalytic Effects	5	1.2	0.6
M	Identified Project Design Weaknesses/Gaps	2.5	0.4	0.1
			TOTAL SCORE (Sum Totals)	3.64

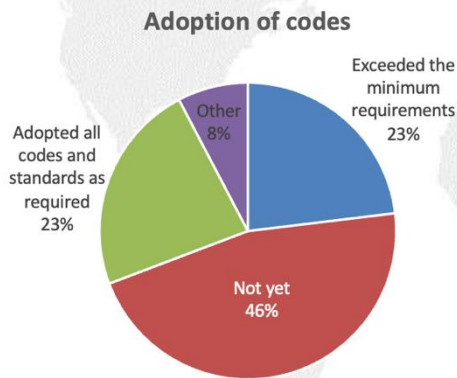
ANNEX VI. SUMMARY OF SURVEY RESULTS

13 survey respondents (small sample)

77% aware of new code

7 female, 6 male | 7 engineers, 5 architects, 1 'other' | 3 were unaware of the EE requirements in the new building codes

→ Outcome 3



Reasons for selecting "Not yet" included:

- Have not worked on a building project that was subject to the new building codes (2)
- Not aware of the EE requirements of the new codes (2)
- Costs of EE and RE measures are prohibitive (1)

Those who have reported the following benefits:

- Energy savings (4)
- Operational cost savings (3)
- Improved thermal comfort of occupants (3)

One responded is still monitoring performance to quantify "true tangible cost saving benefits"

46% of built professionals who responded had already adopted the new building codes and one implemented EE and RE despite not being aware of the new codes → Suggests increased adoption (outcomes 1 & 2)

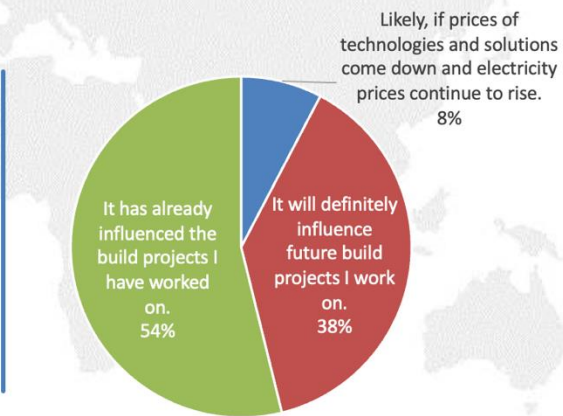
The impact of the zero net energy building

8 respondents were aware of the ZNEB | 12 are inspired by the ZNEB concept

62% aware of ZNEB

→ PSC and knowledge sharing shortcoming

When asked if the concepts demonstrated in the ZNEB will be reflected in their work, **all responded positively** – likely, definitely and already has

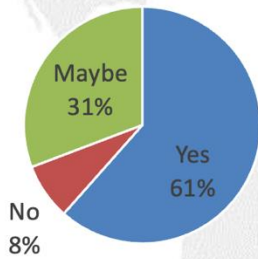


100% inspired to adopt into building practices → Suggests increased adoption (outcomes 1 & 2)

Can ZNEB be cost-effective?

Not all respondents were convinced that ZNEBs can be achieved cost-effectively, suggesting facts of **costs and benefits may be useful to share when available**

ZNEB can be built cost-effectively



“Maybes” were generally attributed to:

- Technology and costs developments that are ongoing and may become more competitive over time

The one definite “No”:

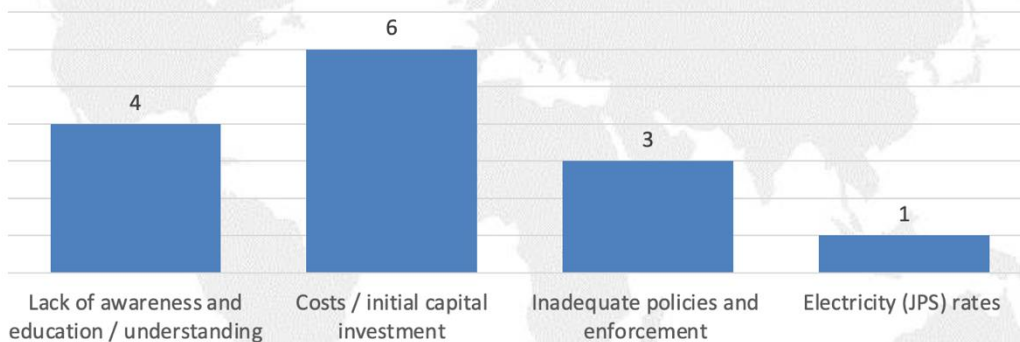
- Was based on the belief that only commercial facilities with large enough rooftop space could be a ZNEB

Positive responses were justified by:

- Traditional, passive building design principles (3)
- Appropriate, cost-effective technology already available (2)
- Policy enforcement (1)
- Business case can be achieved on a Case-by-case basis (1)

Remaining questions about cost-effectiveness that can be addressed by performance data from both ZNEB and retrofit building → **Remaining opportunities for learning and knowledge sharing (outcomes 6 & 7)**

Remaining hurdles to large-scale adoption



ANNEX VII. GEF PORTAL INSERT

Table 29. GEF portal inputs

<p>Question: What was the performance at the project's completion against Core Indicator Targets? (For projects approved prior to GEF-7¹⁰⁶, these indicators will be identified retrospectively and comments on performance provided¹⁰⁷).</p>
<p>Response: <i>(Might be drawn from Monitoring and Reporting section)</i></p> <p>The project targeted two core indicators:</p> <ul style="list-style-type: none"> - Direct and indirect emission reductions of 4,254,949 tons of CO₂ from the building sector by 2035 - Electricity savings of 6,219,100 MWh from the buildings sector by 2035. <p>As discussed under <i>Section V. G: Monitoring and Reporting</i>, baselines, indicators, and data collection are incomplete. The final PIR, dated 30 June 2020, reported preliminary data from the ZNEB as supplying 23,000 kWh of electricity to the grid¹⁰⁸ since November 2018 and offsetting 18.5 tons of CO₂ emissions, presumably over the same period of time. Inadequate data is available to project these values to 2035. This would suggest an emissions factor (EF) of 0.8 was used to calculate the emission reductions.</p> <p>The IGES¹⁰⁹ database capture an emission factor of 0.705 (tCO₂/MWh) for Jamaica, applicable from 2005 to 2019.</p> <p>Actual data is not available for the NHT building, but audit estimates indicated a 46% saving against the 2,273,969 kWh annual energy use for the building i.e. 1,046,025.74 kWh savings per year. The retrofit was completed early in 2022, suggesting the potential cumulative savings from this building alone would be 13,598.3 MWh. With an EF of 0.705, this would save 9,586.8 tons of CO₂.</p> <p>Retrofits of Government buildings were reported as an estimated saving of 38,000 tons of CO₂ emissions, but the timeframe for these savings and the scope of eth retrofits considered as part of this reported number are not clear.</p> <p>The impact of the amended building codes on emission reductions has not been estimated. There is inadequate information regarding the use of energy in buildings in Jamaica, the total building stock, and the savings potential from the new codes to estimate this impact.</p>
<p>Question: What were the progress, challenges and outcomes regarding engagement of stakeholders in the project/program as evolved from the time of the MTR? <i>(This should be based on the description included in the Stakeholder Engagement Plan or equivalent documentation submitted at CEO Endorsement/Approval)</i></p>
<p>Response: <i>(Refer to Section V. I: Factors Affecting Performance)</i></p> <p>There was no stakeholder engagement plan developed at design stage or included for CEO endorsement. There was no MTR done for the project.</p> <p>The project had completed a stakeholder analysis at design stage. This analysis was not actively used or leveraged during implementation, with most of the government entities identified at design</p>

¹⁰⁶ The GEF is currently operating under the seventh replenishment period of the GEF Trust Fund covering the period July 1, 2018 to June 30, 2022. The GEF Portal Reporting Guide for FY20 Reporting Process indicates that GEF-6 projects that have yet to map existing indicators to GEF-7 Core Indicators need to do so at MTR stage or (if already there) at the time of the TE.

¹⁰⁷ This is not applicable for Enabling Activities

¹⁰⁸ It is unclear whether this is net production, after own consumption, or whether this is gross production.

¹⁰⁹ Institute for Global Environmental Strategies (2022). List of Grid Emission Factors, version 10.12. Available at: <https://pub.iqes.or.jp/pub/iqes-list-grid-emission-factors> and CDM Standardized baseline "Jamaica Grid Emission Factor Version 01.0 (ASB0043-2019)

stage, not included in the active stakeholder engagement. Stakeholder engagement was designed to be targeted, focusing efforts on influential or key roleplayers in government, government agencies, academia and among building professionals. At the time of the evaluation, the number of stakeholder who could be identified with active contact details for inclusion in the interviews, were limited. An initial list of 17 stakeholder organisations was prepared based on (i) the stakeholder analysis included in the ProDoc and (ii) stakeholder lists provided by the project. From this list, contact details were not available for four ministries, two participants communicated that they were not available to participate, contact details for one stakeholder were not valid and four contacts did not respond to requests for interviews.

It suggests that the project had limited active stakeholder participation. Considering the focused communication approach taken by the project, this level of participation from stakeholders is disappointing.

The project struggled with active and direct government participation ascribed to multiple change-overs in key roles. A changing context did erode the initial Government support pledged to the project at design stage (Refer Section V. C: *Nature of External Context*). The project did benefit from high level attendance and visible support at key events.

More **general communication and awareness** was targeted under Component 4. There was no evidence available showing an analysis of the intended or actual target audience, the channels of communication, the likely reach of various channels e.g. newspaper, radio, newsletter, etc.

The project did not actively track reach, but a tally of recorded numbers for workshop attendance, unique website visits and various social media platforms suggest that numerous people have engaged with the project learnings and material as follows:

- At least 145 people attending workshops where attendee numbers were available.
- The project documented 185 visitors to the ZNEB (as reported in the last PIR). There is no record of who the visitors were, and gender data were not collected for participants.
- The project reported a total of 3,264 unique visits to the website between its launch on 1 May 2016 and the last reporting date, 30 June 2020.
- The project utilised social media to disseminate information, including: Twitter, Instagram, Facebook and YouTube . Followers range between 300 and 450, depending on the platform

The project also published at least 56 articles communicating the different milestones and events. The reach of the various news articles was not assessed.

Question: What were the completed **gender-responsive measures** and, if applicable, actual gender result areas? (This should be based on the documentation at CEO Endorsement/Approval, including gender-sensitive indicators contained in the project results framework or gender action plan or equivalent)

Response: (Refer to Section V. I: *Factors Affecting Performance*)

There was no gender analysis completed during the project design and no gender action plan included in the approved / CEO endorsed project document. The project design was in not intentionally gender sensitive or responsive. There were no measure designed or implemented to promote gender mainstreaming or empowerment.

The results framework did not include any gender differentiated indicators and the project did not track any gender specific data or gender disaggregated data during the implementation period.

This was however not a requirement at the time of design, with the UNEP Gender Policy was only implemented in 2015.

Interviewed stakeholders offered only broad / general thoughts (if any) regarding the likely benefits of energy efficiency and energy cost savings to women.

Without a deliberate focus on gender and without any data, the following assumptions and observations are made regarding the possible gender impact.

A study by the USAID¹¹⁰, published in 2020 noted that “the sector is managed as if it is gender neutral; gender awareness is limited”. It however noted that Jamaica, more than many of the Caribbean countries included in the study, have made progress towards improved gender inclusivity, also in the energy sector. This is demonstrated by the recent appointment of a woman as Minister of Energy, the Honourable Fayval Williams.

A 2018 research study¹¹¹ by a University of Calgary student, noted the significant opportunities for environmental, social and gender benefits associated with the promotion of sustainable energy in the Caribbean. It defines the “Sustainable Energy sector” to incorporate employment that relates to renewable energy, energy efficiency, or job areas that play a part in reducing carbon emissions from their current carbon intensity within a generation, manufacturing or distribution process.

In promoting the uptake of EE and RE in buildings in the country, the project contribution may therefore also benefit women in the following ways:

- Energy efficiency and clean energy solutions advance **access to affordable and secure energy supply**. In the longer term, this would mean that income-poor women, female-headed households, and/or women intersecting with other minority-vulnerable groups would be better served with electricity services.
- Findings from the studies noted above suggested that the RE sector has not yet been ‘gendered’. It therefore offers greater (less hindered) **employment opportunity** for women to participate as professionals in the sector or in other roles (including management, administrative, technical, sales and marketing, installation, or manufacturing) throughout the supply chain.
- Women in Jamaica are twice as likely to go to university¹¹² and more likely to graduate (women have higher completion rates compared to men throughout the Caribbean). However, they represent only approximately 20.8% of the students in engineering, construction and manufacturing tertiary education programmes (2011 data as reported by the UNESCO Institute of Statistics, 2015)¹¹³. The above-mentioned studies noted that STEM (Science, Technology, Engineering and Mathematics) subjects are associated with male roles and continue to be reflected in the distribution of school subjects taken by girls and boys, despite some efforts to increase the involvement of girls in STEM. The use of the ZNEB as a Science academy will expose more students – at all levels of education – to the opportunities related to STEM, building professions, EE and RE.
- As at 2020, the Jamaican population is slightly favoured towards women with 98.53 males per 100 females¹¹⁴. It is thus assumed that all climate, health and environmental benefits associated with reduced emissions and more sustainable energy use would accrue equally to both genders.

Question: What was the progress made in the implementation of the management measures against the **Safeguards Plan submitted at CEO Approval**? The risk classifications reported in the latest PIR report should be verified and the findings of the effectiveness of any measures or lessons learned taken to address identified risks assessed. *(Any supporting documents gathered by the Consultant during this review should be shared with the Task Manager for uploading in the GEF Portal)*

Response: *(refer to Section V. I: Factors Affecting Performance)*

¹¹⁰ Bonilla, S.G. Perch, L. Adjodha, C. and Avanindra, A. (2020). Caribbean Energy Initiative Regional Gender Analysis, Final Report. 31 December 2020. Available at: https://pdf.usaid.gov/pdf_docs/PA00X8TK.pdf

¹¹¹ Bourns, R. (2018). Gender Representation In The Caribbean Sustainable Energy Sector (Unpublished report). University of Calgary, Calgary, AB. <http://hdl.handle.net/1880/109765>

¹¹² Male gross enrolment ratio in tertiary education (2012) (UNESCO Institute of Statistics, 2015): 20.35%. Female gross enrolment ratio in tertiary education (2012) (UNESCO Institute of Statistics, 2015): 41.73%. Graduates from tertiary education who are female (2009) (UNESCO Institute of Statistics, 2015): 56.4%.

¹¹³ Gender Profile : Jamaica. (2015). 2015_MacDonaldE_etal_Gender-profile-Jamaica.pdf

¹¹⁴ <https://knoema.com/atlas/Jamaica/topics/Demographics/Population/Male-to-female-ratio>

There was **no Environmental, Social and Economic Risk assessment or rating** completed or **Social and Environmental Management Framework** or **Safeguards plan** prepared during the project design or included in the approved / CEO endorsed project document. ESE risks were not tracked throughout implementation.

The project design targets the promotion of sustainable energy use in buildings with an associated reduction in carbon emissions. It also targets improved thermal comfort for building occupants as an intended outcome. Coupled with improved access to affordable, clean and secure energy, the project is expected to contribute to improved living standards for the population of Jamaica. While it sets a target for emissions reductions, the project did not actively track the contribution towards emission reductions. Project implementation delays would also have adversely delayed the anticipated contribution towards emission reductions.

As noted under *Section V. D: Effectiveness*, progress was made towards the targeted outcomes and it is reasonable to expect that new building codes and building practices will result in lower and cleaner energy use and therefore lower emissions from buildings.

The construction of the greenfield ZNEB was confirmed as having complied with all national requirements and authorisations, including environmental impact (with the process of obtaining such authorisations being part of the delays).

The building also considers sustainability more broadly than energy use, incorporating water saving and waste management measures. The building design recommendations note the importance of using locally available material to minimise the environmental footprint. This was confirmed during interviews with the project team as a key learning: to avoid overly sophisticated or too technologically advanced imports. This learning was made based on the need to (i) avoid excessive and unnecessary import costs, (ii) avoid the construction methods being too unfamiliar for the contractors, and (iii) reduce the environmental impact of the building.

The building does not have a waste management plan in place for the safe handling and/or recycling of spent batteries and solar panels.

Question: What were the challenges and outcomes regarding the project's completed Knowledge Management Approach, including: Knowledge and Learning Deliverables (e.g. website/platform development); Knowledge Products/Events; Communication Strategy; Lessons Learned and Good Practice; Adaptive Management Actions? (*This should be based on the documentation approved at CEO Endorsement/Approval*)

Response: (*Refer Section V. D: Effectiveness, Component 4 and Section V. I: Factors Affecting Performance*)

An online knowledge platform was established on the BuildBetter Jamaica website. It is well populated and is still operational, with updates posted until 2021. The project reported a total of 3,264 unique visits to the website between its launch on 1 May 2016 and the last reporting date, 30 June 2020.

The website is not logically structured. By means of an example, information is posted per workshop rather than per topic. The site's search function is also limited. It does contain a wealth of information, video clips of interviews, various publications, a photo gallery, and workshop presentations, among others.

Learnings from this project have been acknowledged by academic institutions and various roleplayers have indicated interest to use the ZNEB demonstration facility for knowledge sharing and practical learning. The location within an academic institution and intended use as Science Academy further supports the idea of this presenting a tangible knowledge product.

Question: What are the main findings of the evaluation?

Response:

The LGGE Promoting Energy Efficiency and Renewable Energy in Buildings in Jamaica project has made important inroads in raising the profile of energy efficiency and renewable energy in buildings in Jamaica.

During the implementation period, Jamaica revised its building codes, for the first time incorporating requirements for EE and Conservation. This also coincided with the adoption of a regional energy efficiency building code, demonstrating a shared, regional intent and priority to reduce the energy use in buildings.

In successfully completing the ZNEB and NHT retrofit demonstration facilities, the project contributed two unique and invaluable assets to the country and the region. It set out (i) to build the first ZNEB in a tropical environment and (ii) retrofitted a prominent building, demonstrating the benefits to the NHT, primary organisation responsible for public housing in the country. The detailed accompanying design and audit documentation, create an opportunity for scaling and replication.

Delivery of these two ambitious construction projects were significantly delayed, caused by project costing, approvals of plans by various authorities, procurement challenges, and importation challenges, among others. Full operation of the buildings have also been delayed by the global COVID pandemic. As a consequence, performance data as a key output from the project, remains pending.

Even if the measured energy performance approaches ZNEB status, it would be a significant achievement. Performance data, credible evidence of the costs and benefits of clean energy interventions and the proven performance and cost-effectiveness of building for net-zero energy use in a tropical climate, will be crucial to accelerate the adoption of advance EE and RE measures in the country.

Stakeholder feedback consistently reinforced the project design hypothesis that a physical demonstration facility with credible evidence of performance will encourage adoption at scale. At this juncture, the reach and impact of the project beyond the two demonstration buildings is uncertain, but significant potential exist if performance data can be collected, analysed and effectively leveraged to influence decision-making and policy setting.

The availability of credible evidence is a unique contribution from the project, intended to unlock uptake and investment at scale. Follow-through on performance monitoring, data collection, analysis, reporting and effective leveraging of this information will be critical. Failure to do so, presents the highest risk to the country transitioning to ZNEBs.

The project faced many challenges. In addition to the two demonstration projects (62% of the budget), it targeted a highly ambitious scope of activities that were poorly defined with a very limited budget. Inconsistencies between the project document and annexes hampered effective implementation.

The governance structures designed for the project were not implemented as planned and did not provide the governance, oversight and strategic direction function it was intended. The absence of government representation on the steering committee structure also meant that the project missed out on the high profile government support and sponsorship. The project did not successfully adapt to changes in the implementation environment and collaborate effectively with complementary initiatives to shape its contribution. A suitably constituted and active project steering group/committee would have been the appropriate forum to help navigate and adapt the project contribution.

Government stakeholders did not support the project to the extent initially committed, or to the extent anticipated at planning stage. This high-level support would have been crucial to facilitate

progress and securing the policy commitments (e.g. 100% building retrofit) the project sought to achieve.

The Evaluation finds the project to have performed Moderately Satisfactory.

ANNEX VIII. BRIEF CV OF THE EVALUATOR

Name: Mari-Louise van der Walt

Profession	Energy and sustainability professional
Nationality	South African
Country experience	<ul style="list-style-type: none"> Africa: South Africa, Namibia, Malawi, eSwatini, East Africa (Kenya, Tanzania, Burundi, Uganda and Rwanda)
Education	<ul style="list-style-type: none"> Bachelors in Civil Engineering (University of Stellenbosch, South Africa) Bachelors in Building Arts (University of Port Elizabeth, South Africa).

Short biography

Mari-Louise is an international consultant working out of Cape Town, South Africa –working mainly for government, government agencies or organisations and development partners active across the continent.

She offers a diverse background incorporating experience in environmental and waste engineering, project and programme management, strategy consulting and energy efficiency. Since 2004 however, her focus has been almost exclusively on various aspects of clean energy.

Her experience in the energy sector has been equally diverse, spanning design, development, planning and implementation of various energy efficiency programmes and interventions; incentive mechanisms for energy efficiency and small-scale renewable energy projects; market, technology and product analyses for new energy efficiency initiatives; and tracking and assessing project outcomes and market transformation over time. She has led terminal evaluations for both UNDP and UNEP and served as energy expert/evaluator for the AfDB Country Strategy and Program Evaluations - South Africa (Energy component only).

Key specialties and capabilities cover:

- Energy efficiency
- Renewable energy
- Renewable energy minigrids
- Energy storage
- Programme / project development
- Policy studies
- Evaluation

Selected assignments and experiences

Independent evaluations:

- The below-listed assignments are most relevant to this evaluation and includes three independent evaluations, several reviews of programmes and a selection of sector status reports completed since 2013.

SELECTION OF ASSIGNMENTS

Description of Assignment and Responsibility	Capacity / Role
Project: Parliamentary report: Section 12L Energy Efficiency Tax Incentive Status, 2013 - 2019 Client: South African National Energy Development Institute (SANEDI) Date: May – November 2020	Project lead, lead author and editor

SELECTION OF ASSIGNMENTS

Description of Assignment and Responsibility	Capacity / Role
<p>Compilation of the first report for Parliament regarding the 12 L Energy Efficiency Tax Incentive. The report provides a comprehensive overview of the tax incentive over the stated period, provides an analysis of participants/beneficiaries, economic sectors benefitted, energy savings, technologies employed, geographic distribution of projects, costs and benefits against the targeted objectives and the likely economic contribution from the tax stimulus.</p> <p>The scope of activities includes sourcing, review, analysis and evaluation of data, and compilation and packaging (with assistance of a graphic designer) of the report for Parliament.</p>	
<p>Project: Terminal Evaluation of the Energy Efficiency Buildings in East Africa Project Client: UNEP Date: July – December 2018</p> <p>Conducting a terminal evaluation of the GEF funded Energy Efficient Buildings in East Africa project, implemented by UN-Habitat in Kenya, Tanzania, Burundi, Rwanda and Uganda. The evaluation assessed to what extent the project delivered on its targeted outcomes in the five partner countries.</p>	International Evaluator
<p>Project: Status and Opportunity Report of the Energy Sector in Southern Africa Client: DBSA Date: October – November 2017</p> <p>Development of a status and opportunity report for the energy sector in Southern Africa intended to provide a consolidated and credible information resource that can inform the Bank's prioritisation, decision-making and investment focus.</p>	Part of three-person team of industry specialists
<p>Project: State of Renewable Energy in South Africa report, 2015 and 2017 Update Client: GIZ (funded) and DOE Date: April – October 2015, April – November 2017</p> <p>Compilation of a comprehensive status overview of Renewable Energy in South Africa for publication during SAIREC, October 2015. Followed by an comprehensive update in 2017.</p>	Project lead, lead author and editor
<p>Project: Parliamentary reports. A review of the Income Tax Act (Section 12-I) energy efficiency incentive Client: the dti and SANEDI Date: October 2015 – January 2016</p> <p>Compilation of both the first and second reports delivered to parliament regarding the 12 I Tax Incentive Allowance (TAI). The respective reports entailed a review and analysis of participation, savings, technologies, geographic distribution of projects, costs and benefits against the targeted objectives and the likely economic contribution resulting from the 12 I TAI. It produced lessons learned and proposed refinements to the implementation of the tax incentive for subsequent implementation rounds.</p>	Independent consultant
<p>Project: Country Strategy and Program Evaluations - South Africa (Energy component only) Client: African Development Bank (AfDB); Date: August 2015 – January 2016</p> <p>Energy expert responsible for the evaluation of the Bank's portfolio of energy projects in South Africa. This component of the review formed part of a broader portfolio review of projects for which AfDB provided development finance in the country). Work entailed the collection of credible evaluative evidence from site visits, interviews, analysis and research to assess the</p>	Energy expert to Ecorys Netherlands (Ecorys NL was the consultancy appointed for the review for South Africa and Nigeria)

SELECTION OF ASSIGNMENTS

Description of Assignment and Responsibility	Capacity / Role
<p>development results of the Bank's engagement in South Africa during the period 2004 to 2014. The review of the energy projects incorporated a detail evaluation of three energy projects including the Sere Wind Farm. Lessons and recommendations from the review were used to inform the design and implementation of the Bank's future strategies and operations in the country. Deliverables included three detailed project review appraisals, the energy component of the technical report and input into the portfolio assessment report.</p>	
<p>Project: Energy efficiency benchmarking research Client: Eskom IDM Date: April 2014 Conduct a short desktop, benchmarking study to assess the performance of the Eskom IDM initiative against similar initiatives world-wide.</p>	Independent consultant
<p>Project: Terminal Evaluation of the NEEP in Buildings Project Client: UNDP, Renewable Energy and Energy Efficiency Institute (REEEI) and the Ministry of Mines and Energy, Namibia Date: February – March 2014. Conducting a terminal evaluation of the 3-year GEF funded Namibia Energy Efficiency Programme for buildings to assess to what extent the project has delivered on its targeted outcomes.</p>	International Evaluator
<p>Project: Integrated Demand Management Impact Study Client: Eskom IDM Date: August – October 2013 An analysis and assessment of the contribution that the Eskom IDM programme has made since its inception in 2004. The impact study entailed a high-level evaluation of the overall impacts and contribution of the IDM Programme. The assessment utilised a systems approach to map the complex electricity sector and to illustrate the contribution of Energy Efficiency and Demand Side Management (EEDSM) in maintaining system equilibrium. EEDSM contributions were quantified in terms of the economic (Investments made, Cost of Unserved Energy (COE), economic contribution/GDP sectoral input share adjusted), environmental (carbon emissions and water) and socio-economic (direct and indirect job creation and job protection) contribution. Mari-Louise was responsible for the final deliverable with support of two junior economists and input from a senior economist in the energy sector.</p>	Lead consultant

ANNEX IX. EVALUATION TORS (WITHOUT ANNEXES)

Section 1: PROJECT BACKGROUND AND OVERVIEW

1. Project General Information

Table 1. Project summary

GEF Project ID:	4167		
Implementing Agency:	UNEP	Executing Agency:	Institute for Sustainable Development (ISD) at University of the West Indies (UWI), Mona
Relevant SDG(s) and indicator(s):	SDG goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all. Targets 7.2: By 2030, increase substantially the share of renewable energy in the global energy mix; and 7.3: By 2030, double the global rate of improvement in energy efficiency.		
Sub-programme:	Sub-programme 1. Climate Change	Expected Accomplishment(s):	(b) Countries increasingly adopt and/or implement low greenhouse gas emission development strategies and invest in clean technologies (i) The number of countries supported by UNEP that make progress in adopting and/or implementing low greenhouse gas emission development plans, strategies and/or policies (ii) Increase in climate finance invested by countries or institutions for clean energy, energy efficiency and/or amount of decarbonized assets
UNEP approval date:	January 2012	Programme of Work Output(s):	Programme of work 2020-2021, sub-programme 1: climate change.
GEF approval date:	January 2011	Project type:	Full Size Project
GEF Operational Programme #:	GEF IV	Focal Area(s):	Climate Change Mitigation
		GEF Strategic Priority:	CC-SP-1: Building EE
Expected start date:	February 2013	Actual start date:	July 2013
Planned completion date:	January 2017	Actual operational completion date:	31 March 2020
Planned project budget at approval:	USD 7,461,000	Actual total expenditures reported as of June 2020:	USD 7,746,851
GEF grant allocation:	USD 2,361,000	GEF grant expenditures reported as of June 2020:	USD 1,735,954.76
Project Preparation Grant - GEF financing:	USD 30,000	Project Preparation Grant - co-financing:	USD 50,000

Expected Full-Size Project co-financing:	USD 5,100,000	Secured Full-Size Project co-financing:	USD 5,100,000
First disbursement:	May 2013	Planned date of financial closure:	March 2021
No. of formal project revisions:	Two (2)	Date of last approved project revision:	February 2019
No. of Steering Committee meetings:	7	Date of last Steering Committee meeting:	April 2019
Mid-term Review (planned date):	Q2 2014	Mid-term Review/ Evaluation (actual date):	N/A
Terminal Evaluation (planned date):	2017	Terminal Evaluation (actual date):	March 2020
Coverage - Country:	Jamaica	Coverage - Region:	Caribbean
Dates of previous project phases:	N/A	Status of future project phases:	N/A

2. Project rationale

1. Jamaica is an independent island state of approximately 10,991 sq. km located in the Caribbean, south of Cuba. The total population of Jamaica was estimated to be 2,847,232 as at July 2010, with over 50% urban settlement. The modern economic development of Jamaica has been almost entirely dependent on imported petroleum as its primary source of energy, currently accounting for approximately 93% of total energy consumption, with the remainder derived from renewable sources.

2. There have been many initiatives in the past to develop better energy policies in Jamaica, including the promotion of diversification, the development of renewable energy sources and increased energy efficiency, but these have failed to deliver any substantial improvements. There are a number of factors that have effectively impeded progress, including problems with governance and policy conflicts, misguided technology choices, market failures, and unhelpful institutional structures. Specific problems include: an inefficient public electricity system, with old generating plant; inefficient use of energy in manufacturing and other productive sectors; inefficient energy use in the public sector, including the extensive use of pumps (rather than gravity feed) to deliver the nation's water supply; low public awareness of the importance of energy conservation; and an inadequate policy framework to promote energy conservation and efficiency. As a result, Jamaica has been unusually inefficient in its use of energy.

3. Jamaica's National Energy Policy 2009 — 2030 calls for Jamaica to develop its renewable energy sources and enhance its international competitiveness and energy security while simultaneously reducing its carbon footprint. This Energy Policy, which is a component of the Vision 2030 National Development Plan, sets targets for the percentage diversification of energy supply that by 2030, 20% of the country's energy mix is to be derived from renewable sources. Seeing as how past efforts to increase energy conservation and improve efficiency have not been coherent or sustained, the Government's Energy Policy intends to overcome the above mentioned-barriers to the implementation of Energy Conservation and Efficiency (ECE) initiatives.

4. World energy demand is projected to grow by over 50% by 2030, with developing countries creating about 75% of that increased demand. Today, the global energy system is 39% efficient, but this still means that over 60% of total latent energy input is still being lost, rather than converted into useful energy. About half of the 'missing' energy is lost in energy generation and transmission, the rest is lost as a result of leaky buildings, inefficient appliances and so on.

5. It is particularly important to improve the energy performance of buildings, as the residential sector alone accounts for 25% of total end-use demand (and 19% of global GHG emissions). The greatest need for innovative and cost-effective building solutions lies in tropical and sub-tropical regions, as it is more technically difficult to keep the interior of a building cool and dry in a hot, humid climate than to keep it warm in a cold climate. Levels of energy efficiency in most of the buildings in the Caribbean region, for example, are exceptionally low, with very high cooling loads. This means that the building sector in tropical and sub-tropical regions has a considerable potential for positive change, to become far more efficient in terms of resource use, less environmentally intensive, and less costly.

6. Building related emissions were estimated at 8.6 billion tons in 2004 — a figure that could almost double by 2030 — yet available technologies could cut energy consumption in both new and old buildings by between 30 and 50 per cent without significantly increasing investment costs. Smart design, improved insulation, low energy appliances, high efficiency ventilation and heating/cooling systems, and the behavior of building users can all be market-driven and have a significant impact. A systemic transformation of the built environment is, however, unlikely to happen until governments establish a policy framework that rewards life-cycle approaches to energy efficiency in the building sector

7. The Institute of Sustainable Development (ISD) at the University of the West Indies (UWI), based on the Mona Campus in Kingston, Jamaica initiated, with the financial support of the Global Environmental Facility (GEF) and the technical assistance of the United Nations Environment Programme (UNEP), the project titled *"Promoting Energy Efficiency and Renewable Energy in Buildings in Jamaica"*. The project aims to develop highly energy efficient solutions that can make houses more self-sufficient. The project also aims to incorporate renewable energy technologies to enable development of zero net energy buildings.

8. The core design concept for the advanced prototype building is the combination of high levels of energy efficiency, the use of renewable energy sources, and sustainable climate adaptation methodologies. The goal is a modal shift in building forms and technologies, making zero net energy construction the preferred option in tropical and sub-tropical regions.

9. The UWI/GEF/UNEP project was designed to identify solutions, demonstrate feasibility, raise market expectations for new construction and increase demand for retrofit solutions. The solutions, technical tools, policy measures, regulatory frameworks and building standards to be developed in this project are expected to significantly increase the size of the market for energy efficiency and renewable energy technologies in Jamaica, across the Caribbean region, and in the other tropical and sub-tropical regions of the world. Through the project, the development and implementation of appropriate regulatory and technical tools to promote far higher standards of energy efficiency and the increased use of renewable energy sources within the Caribbean built environment will be promoted.

10. The project is linked to UNEP's Sustainable Buildings and Construction Initiative (SBCI). This is a UN partnership established to promote more sustainable buildings, which includes increasing their energy efficiency. The project is also linked to national and regional policy processes to ensure that lessons learned are reflected in government policies on energy, planning and building.

3. Project objectives and components

11. This project is supporting Jamaica to invest in clean technologies, specifically in the building sector. It has piloted a net-zero energy building, the first of its kind in Jamaica and the Caribbean, and is also supporting the retrofitting of the National Housing Trust (NHT) building in Kingston. This is a strategic target as the NHT supports the development of low-cost housing throughout the country. The project has also developed draft policies and handed these to the Minister of Energy for policy-makers to take into account as they draft energy efficiency policies for facilitating the transformation to a low-emission building sector in Jamaica.

12. There are several formulations of the project objective available. According to the Project Document (also referred to as 'Prodoc'), the objective of this project is *"to demonstrate that far higher standards of energy efficiency and productivity, renewable energy utilization and sustainable building practices and policies are fully feasible in tropical and sub-tropical regions"*. The intervention logic (Logical Framework) in the Prodoc states it as: *"To demonstrate far higher standards of energy efficiency, renewable energy and environmental sustainability are both possible and desirable in building practices and policies in tropical and sub-tropical regions"*. The latest Project Implementation Report (PIR FY 2020) gives the following description of the project objective: *"Increase energy efficiency (EE) and the use of renewable energy (RE) in the building sector in Jamaica thus reducing energy consumption and greenhouse gas (GHG) emissions"*.

13. The project consists of six main components including: (i) Research, Planning and Design; (ii) Building Envelope — Detailed Design and Build; (iii) Building Technologies, Systems and Subsystems; (iv) Monitoring and Evaluation (v) Dissemination and; (vi) Project Management. Table 2 below presents the project components, planned **Activities**¹ and **Outputs**², and their expected **Outcomes**³.

¹ An **activity** is an action taken, or work performed, through which inputs are utilized to realize specific results.

² An **output** is the availability (for intended beneficiaries/users) of new products and services and/or gains in knowledge, abilities and awareness of individuals or within institutions.

³ An **outcome** is the use (i.e., uptake, adoption, application) of an output by intended beneficiaries, observed as a change in institutions or behaviors, attitudes or conditions.

Table 2: Results Framework⁴

Project Component	Activities	Outputs	Expected Outcomes
Component 1: Technical Design	Activity 1.1: Review of existing practices, standards and building practices and detailed assessment of energy demand patterns and energy saving potential in buildings / Output: Comprehensive understanding of present energy consumption patterns in buildings and potential for increasing EE of the same	Output 1.1 Climatically relevant designs and energy efficient technological building solutions, practices, standards, and codes developed by local and regional professionals for testing.	Outcome 1: Energy audit to model consumption in existing building types and integrated plan for construction of a demonstration prototype net-zero emission building to establish proof of concept in the sub-tropics, and test and develop building practices, standards and codes.
	Activity 1.2: Design of highly innovative core building systems, components, and solutions / Output: Basic designs of highly innovative core building systems, components, and solutions	Output 1.2: Detailed assessment of energy demand patterns and associated opportunities for energy savings in buildings in (sub)tropical regions	
	Activity 1.3.1: Development of a collaborative plan for construction of a prototype, net-zero energy building / Output: Collaborative plan involving all concerned parties for the construction of a prototype, net-zero energy building	Output 1.3: General design of highly innovative core building systems, components, and solutions.	
	Activity 1.3.2: Preparation of Final Design Report		
	Activity 1.4: Development of optimal prescriptions for achieving far higher EE in buildings in tropical and sub-tropical regions at reasonable cost.	Output 1.4: Identification of possible building practices, standards, and codes for achieving higher EE and increased use of RE in buildings in tropical and sub-tropical countries at affordable cost.	
Component 2: Retrofit Solutions	Activity 2.1: Design and installation of integrated technological solutions and associated building components	Output 2.1: Assessment and identification of most advanced retrofit solutions to increase EE and use of RE in existing buildings while withstanding anticipated impacts of climate change.	Outcome 2.1: Advanced retrofit solutions to demonstrate to concerned agencies and stakeholders the economic and environmental benefits of retrofitting in terms of applying energy efficiency (EE) and renewable (RE) technologies in existing buildings
	Activity 2.2: Enter into agreement with a party responsible for a high profile building suitable to demonstrate the environmental and economic benefits of an energy retrofit.	Output 2.2: Identification and retrofitting of a suitable high-profile building to demonstrate the environmental and economic benefits of retrofitting existing buildings.	
	Activity 2.3.1: Identify training opportunities for architects, planners, building engineers, policy and other relevant experts of the economic benefits of retrofitting.	Output 2.3: Increased awareness among architects, planners, building engineers, and other relevant experts of the economic benefits of retrofitting and development of a financing mechanism to make retrofitting affordable	Outcome 2.2: Demonstration to policymakers, government officials, owners of buildings and houses, architects, and construction companies of the technical feasibility and the
	Activity 2.3.2: Encourage finance institutions and policy makers to give incentives to make retrofitting affordable.		

⁴ Sources: Prodoc, Project Workplan (April 2019) and PIR FY 2020

Project Component	Activities	Outputs	Expected Outcomes
			<p>environmental and economic benefits of retrofitting existing buildings</p> <p>Outcome 2.3: Sustainable retrofitting operations including the availability of affordable financing</p>
Component 3: Zero-Net Energy Demonstration Building	Activity 3.1.1: Survey for suitable building site for the prototype net-zero energy building	Output 3.1: Detailed design and installation and construction of integrated technological solutions and associated building components to (i) test possible building practices, standards, and codes; and (ii) develop energy efficiency ratings for components and integrated combinations/solutions	Outcome 3.1: Net-zero energy demonstration building including assembled building components and modules that show policymakers, government officials, homeowners and buyers, architects, and construction companies the feasibility and environmental benefits of a net-zero energy building
	Activity 3.1.2: Identification of suitable building forms and materials for net-zero energy building		
	Activity 3.1.3: Development of building components, their assembly into modular systems, and construction of the prototype net-zero energy building structure		
	Activity 3.1.4: Development of revised emergency shelter standards		
	Activity 3.2.1: Continuous assessment of the energy performance of the prototype net-zero energy building	Output 3.2: Continuous assessment of the performance of the building and subsystems and development of EE and resource-use benchmarks and performance levels	Outcome 3.2: Efficient operation and maintenance of the net-zero energy demonstration building and establishment of permanent learning process to develop more advanced EE and RE applications and increase EE and the use of RE in buildings in the future
	Activity 3.2.2: Audits to monitor the long-term performance and efficiency of the power, heating, cooling, and water treatment systems		
	Activity 3.3: Increasing awareness among regional architects, building engineers, and other relevant experts about advanced new EE and options in buildings /Output: Market transformation, development of financial incentives, and increased investment in EE buildings and RE for use in buildings	Output 3.3: Increased awareness among architects, planners, building engineers, and other relevant experts of the advanced building technologies to increase EE and the use of RE in buildings and development of suitable financing mechanisms	Outcome 3.3: Increased investments in more energy efficient lighting, heating, and cooling solutions in new buildings and sustainable market transformation to net-zero energy buildings
	Activity 3.4: hand-over of final net-zero energy building (NZEB) to university (UWI).		
Component 4: Policy and Regulatory Framework	Activity 4.1: Recruit a competent specialist to review existing regulations and practices for retrofitting of existing Buildings. Identify key policy options to support retrofitting of suitable buildings.	Output 4.1: Review of existing regulations and practices for retrofitting of existing buildings and identification of key policy options to ensure retrofitting of all suitable buildings	Outcome 4.1: National policy and plan for retrofitting all suitable existing buildings and comprehensive policy and regulatory framework for development of net-zero energy buildings
	Activity 4.2.1: Engage policy makers and stakeholders in key activities of the project such as a workshop to review the relevant building codes.	Output 4.2: Making policymakers fully aware of the potential for substantially increasing EE and the use of RE in buildings and the	Outcome 4.2: Designation of regional

Project Component	Activities	Outputs	Expected Outcomes
	Activity 4.2.2: Work with the relevant Ministries, national and local Government agencies to identify the optimal changes in policies, practices, planning guidelines, controls and regulations that would lead to significant improvements.	development of corresponding building codes and regulations	or extra-regional testing facility to promote enforcement of EE standards for buildings in the region
	Activity 4.2.3: Support local government agencies to prepare/train parish councils on the legal frameworks and building code.		
	Activity 4.3: Involve relevant government agencies in planning and building control, support training government agencies as well as our existing testing facilities through workshops.	Output 4.3: Development of national quality supervision systems and strengthening of testing facilities	
	Activity 4.4 Offer assistance to local government to prepare assessment of parish councils as well as reviewing certification of material testing facilities	Output 4.4: Assessment of existing testing facilities, consultations, and preparation of framework agreements	
Component 5 Dissemination of Information	Activity 5.1: Participate in at least 2 information campaigns to bring awareness and prepare reports on at least two education and training programmes.	Output 5.1: Preparation and implementation of education and training programs and media campaigns for Jamaica and the Caribbean region	
	Activity 5.2.1: Use of the prototype net-zero energy building as well as the retrofit building to share about energy efficient designs and technology as well as Renewable energy via at least two (2) tours of each building and distribution of booklets.	Output 5.2: Establishment of the demonstration retrofit building and the net-zero energy building to serve as information dissemination points.	
	Activity 5.3.1: Agreed and signed procedure for sharing project information such as the Project Report	Output 5.3: Development of procedures for sharing information with Caribbean nations and other (sub)tropical regions.	
	Activity 5.4.1: Produce a booklet and presentations showing the financial and economical evaluation data and cost/benefits models for distribution and two training session/workshops.	Output 5.4: Preparation and dissemination of cost/benefits analysis methodologies and financial and economic evaluation models	

4. Executing Arrangements

14. UNEP is the GEF **Implementing Agency**, through the Climate Change Mitigation Unit, Energy Branch, Economy Division. The Unit was tasked with overseeing the successful achievement of the project objectives. The project was carried out over a period of approximately 7 years (2013-2020) during which time UNEP/Economy Division provided the project with management and technical advice and guidance as required.

15. The **Executing Agency** of the project was the Institute for Sustainable Development (ISD) at University of the West Indies (UWI). UWI's campus in Mona provided the institutional basis for the development of the Project through the ISD.

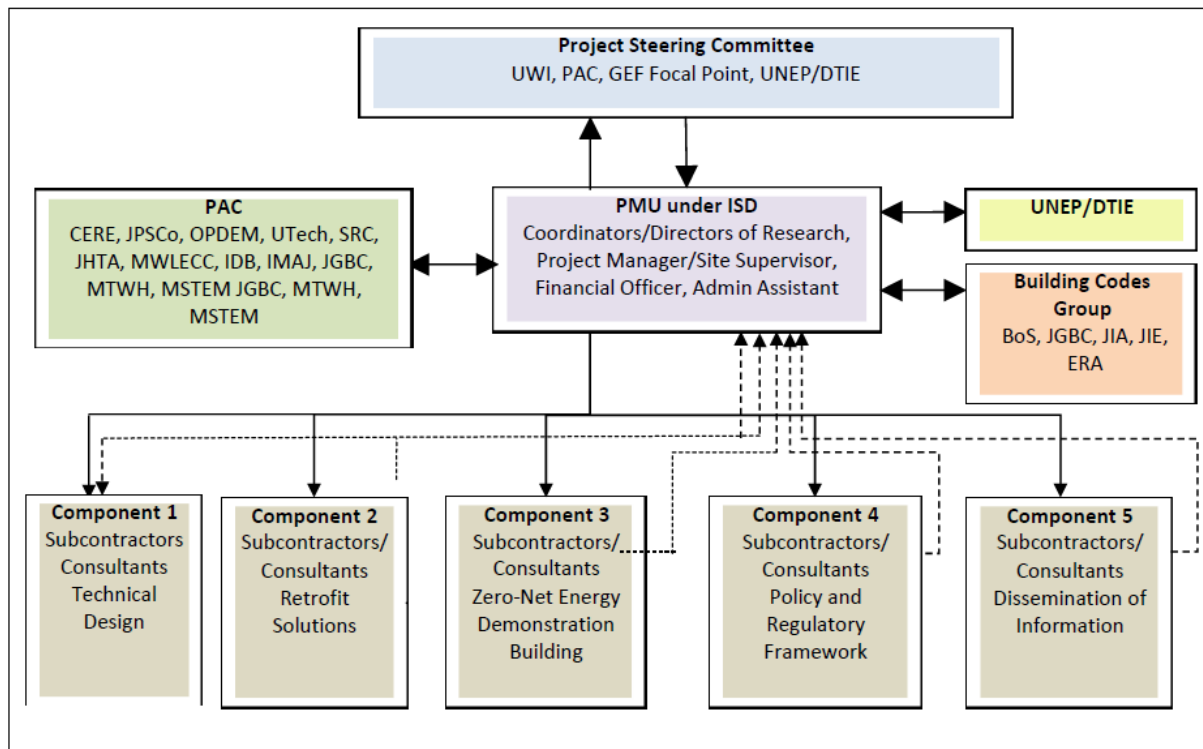
16. **Project Advisory Committee (PAC)** was chaired by the ISD, consisting of a core group of key stakeholders and project partners. The PAC helped to oversee the Project, and track progress towards the objectives; it was to receive periodic reports on progress and make recommendations to UNEP concerning the need to revise any aspects of the Results Framework or the M&E plan. The PAC also ensured operational coordination among the different government agencies, professional bodies, donors and other interests working in the same sector, and was responsible for the dissemination and institutionalization of the lessons learned under the Project.

17. At the operational level, the Project was executed by a **Project Management Unit (PMU)** created within ISD and supported by national and international consultants as well as the Project Advisory Committee. The PMU was managed by two Coordinators/Directors of Research, a full time **Project Manager (PM)**, with a Financial Officer and an Administrative Assistant. The PMU was based at the project site at UWI's Mona campus, Kingston, Jamaica. The PMU was responsible for preparing, monitoring, and updating project work plans, scheduling project activities, recruitment and supervision of consultants, technical supervision of project activities, financial planning of expenditures and disbursements of GEF funds, management of the contributions of co-financiers and their use, coordination of project activities, liaison with stakeholders, organization of workshops and other meetings, preparation of training programs in cooperation with consultants, and financial and progress reporting. The PMU reported to ISD and UNEP/DTIE.

18. Project oversight to ensure that the project met UNEP and GEF policies and procedures was the responsibility to the **Task Manager** in UNEP-GEF. The Task Manager was also required to review the quality of draft project outputs, provide feedback to the project partners, and establish peer review procedures to ensure adequate quality of scientific and technical outputs and publications.

19. Figure 1 below provides a diagrammatic representation of the project's implementation arrangements.

Figure 1: Implementation Arrangements



20. The project team at the University of the West Indies (UWI) worked closely with key stakeholders that were represented on the Project Advisory Committee, including:

- Ministry for Water, Land, Environment, and Climate Change (MWLECC)

- Ministry of Science, Technology, Energy, and Mining (MSTEM)
- Ministry of Transport, Works, and Housing (MTWH)
- Jamaica Institution of Engineers (JIE)
- Jamaica Public Service Company Ltd (JPSCo)
- Office of Disaster Preparedness and Emergency Management (ODPEM)
- Jamaica Institution of Architects (JIA)
- The Institute of Sustainable Energy, University of Technology, Jamaica (UTech)
- The Scientific Research Council (SRC)
- Jamaica Hotel and Tourist Association (JHTA)
- Inter-American Development Bank (IDB)
- Incorporated Masterbuilders Association of Jamaica (IMAJ)
- Bureau of Standards (BoS)
- Centre of Excellence for Renewable Energy (CERE)
- Jamaica Green Building Council (JGBC)
- Environmental Regulatory Authority (ERA)
- Private Sector Organization of Jamaica
- Petroleum Corporation of Jamaica (PCJ),
- University of Technology (UTECH)
- Caribbean Academy of Sciences, Jamaica (CASJ)

21. Through the project stakeholders, the PMU was able to access expertise and resources, access current technical information and best practices, identify training prospects, disseminate information and solicit feedback through the local, regional and international networks of the stakeholders.

5. Project Cost and Financing

22. The overall funding of the proposed project was estimated at USD 7.461 million of which USD 2.361 million was requested from the GEF. The remainder of the funding comes from the University of the West Indies and other project partners as co-funding. Table 3 and Table 4 below present a breakdown of the project funding by Component and by co-financing source, respectively.

Table 3: Overall Project Budget by Component

Project Components	GEF Financing (a)		Co-Financing (b)		Total (USD) (c=a+ b)
	(Million USD)	%	(Million USD)	%	
1. Technical Design	0.225	31	0.500	69	0.725
2. Retrofit Solutions	0.800	32	1.700	68	2.500
3. Zero-Net Energy Demonstration Building	0.800	32	1.700	68	2.500
4. Policy and Regulatory Framework	0.200	31	0.450	69	0.650
5. Dissemination of Information	0.100	29	0.250	71	0.350
6. Project Management	0.236	32	0.500	68	0.736
Total Project Costs	2.361	32	5,100	68	7,461

Table 4: Summary of Co-financing

Name of Co-financier (source)	Classification	Type	Project (USD)	%
Jamaica Public Service Company	Beneficiary	In-kind	100,000	2.0
Office of Disaster Preparedness & Emergency Management	Beneficiary	In-kind	100,000	2.0
Jamaican Institute of Architects	Beneficiary	In-kind	250,000	4.9
Jamaican Institute of Engineers	Beneficiary	In-kind	450,000	8.8
University of Technology of Jamaica	Beneficiary	In-kind	750,000	14.7
Scientific Research Council of Jamaica	Beneficiary	In-kind	500,000	9.8

Name of Co-financier (source)	Classification	Type	Project (USD)	%
University of the West Indies	Executing Agency	In-kind	1,900,000	37.2
Caribbean Academy of Sciences, Jamaica	Multilateral Agency	In-kind	500,000	9.8
UNEP	Multilateral Agency	In-kind	50,000	1.0
Inter-American Development Bank	Multilateral Agency	Cash	400,000	7.8
Government of Jamaica	Government	Cash	100,000	2.0
Total Co-financing			5,100,000	100.0

6. Implementation Issues

23. The project was initially planned for a duration of 48 months however there have been a couple of project extensions required to bring the project to a successful completion. At the onset there was found to be issues related to low technical capacity within the Executing Agency. It was also noted that in the early stages of implementation, there were challenges related to weak project ownership at the government level. Although the Project Steering Committee had representation from line ministries in the Government of Jamaica, the greater representation was from academia and technical organisations. The pre-evaluation briefing also revealed challenges with the co-financing commitments, as these did not materialise as earlier envisaged; while there was definitely in-kind contributions, these have not been reported on in a comprehensive manner, making it difficult to quantify the extent of co-financing that was actually provided.

24. Progress towards the project objective was reported in the PRI FY2020 as moderately satisfactory. Included among activities and outputs that were lagging behind at the technical completion were: the development of procedures for sharing information, policy work and other documents emanating from the project with other Caribbean nations; and the development of cost/benefits analysis methodologies and financial and economic evaluation models. The evaluation will try to establish what the outcomes of these delays are likely to be and attempt to draw lessons and/or recommendations on the same.

25. The Covid-19 Pandemic is reported to have impacted four important deliverables: (i) With regard to project demonstrations, the net-zero energy building has become fully operational and handed over for regular usage to the University of West Indies, Mona Campus. It is intended that certification of the building as net-zero will be achieved once regular usage is established; there is a risk however, that the net-zero energy building will not receive international NZEB certification in the near future, due to its inability to be used on a regular basis for 12 months due to the Covid-19 pandemic. (ii) The UWI Physics Department had plans to start Summer Courses in the net-zero energy building (NZEB) prototype. This can only ensue when the building can be in regular use, but the Pandemic has postponed the use of the building by the physics department until further notice. (iii) Production of a video documentary of the net-zero building was postponed. (iv) The Retrofit works at the NHT were delayed. Works restarted in May 2020 were expected to be completed in September 2020. (v) The finalization of the Energy Demand Assessment Report was also delayed to June 2020

26. While this a GEF-4 project with no explicit gender focus incorporated into project design, the project has strived to incorporate gender considerations into its activities. The design of the net-zero energy building prototype incorporated gender considerations in accordance with international building codes adopted by Jamaica.

Section 2. OBJECTIVE AND SCOPE OF THE EVALUATION

7. Objective of the Evaluation

27. In line with the UNEP Evaluation Policy⁵ and the UNEP Programme Manual⁶, the Terminal Evaluation is undertaken at completion of the project to assess project performance (in terms of relevance, effectiveness and efficiency), and determine outcomes and impacts (actual and potential) stemming from the project, including their sustainability. The evaluation has two primary purposes: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote operational improvement, learning and knowledge

⁵ <https://www.unenvironment.org/about-un-environment/evaluation-office/policies-and-strategies>

⁶ <https://wecollaborate.unep.org>

sharing through results and lessons learned among UNEP/Economy Division, UWI, CERE, JPSCo, OPDEM, UTech, SRC, JHTA, MWLECC, IDB, IMAJ, JGBC, MTWH, MSTEM, JGBC, BoS, JGBC, JIA, JIE and ERA. Therefore, the evaluation will identify lessons of operational relevance for future project formulation and implementation, especially for the second phase of the project, where applicable

8. Key Evaluation Principles

28. Evaluation findings and judgements will be based on **sound evidence and analysis**, clearly documented in the evaluation report. Information will be triangulated (i.e. verified from different sources) as far as possible, and when verification is not possible, the single source will be mentioned (whilst anonymity is still protected). Analysis leading to evaluative judgements should always be clearly spelled out.

29. **The “Why?” Question.** As this is a terminal evaluation and a follow-up project is likely [or similar interventions are envisaged for the future], particular attention will be given to learning from the experience. Therefore, the “Why?” question should be at the front of the consultants’ minds all through the evaluation exercise and is supported by the use of a theory of change approach. This means that the consultant(s) needs to go beyond the assessment of “what” the project performance was and make a serious effort to provide a deeper understanding of “why” the performance was as it was. This should provide the basis for the lessons that can be drawn from the project.

30. **Attribution, Contribution and Credible Association:** In order to *attribute* any outcomes and impacts to a project intervention, one needs to consider the difference between what has happened with, and what would have happened without, the project (i.e. take account of changes over time and between contexts in order to isolate the effects of an intervention). This requires appropriate baseline data and the identification of a relevant counterfactual, both of which are frequently not available for evaluations. Establishing the *contribution* made by a project in a complex change process relies heavily on prior intentionality (e.g. approved project design documentation, logical framework) and the articulation of causality (e.g. narrative and/or illustration of the Theory of Change). Robust evidence that a project was delivered as designed and that the expected causal pathways developed supports claims of contribution and this is strengthened where an alternative theory of change can be excluded. A *credible association* between the implementation of a project and observed positive effects can be made where a strong causal narrative, although not explicitly articulated, can be inferred by the chronological sequence of events, active involvement of key actors and engagement in critical processes.

31. **Communicating evaluation results.** A key aim of the evaluation is to encourage reflection and learning by UNEP staff and key project stakeholders. The consultant(s) should consider how reflection and learning can be promoted, both through the evaluation process and in the communication of evaluation findings and key lessons. Clear and concise writing is required on all evaluation deliverables. Draft and final versions of the main evaluation report will be shared with key stakeholders by the Evaluation Manager. There may, however, be several intended audiences, each with different interests and needs regarding the report. The consultant(s) will plan with the Evaluation Manager which audiences to target and the easiest and clearest way to communicate the key evaluation findings and lessons to them. This may include some, or all, of the following; a webinar, conference calls with relevant stakeholders, the preparation of an evaluation brief or interactive presentation.

9. Key Strategic Questions

32. In addition to the evaluation criteria outlined in Section 10 below, the evaluation will address the **strategic questions** listed below. These are questions of interest to UNEP and to which the project is believed to be able to make a substantive contribution:

(a) Smart design, improved insulation, low energy appliances, high efficiency ventilation and heating/cooling systems, and the behavior of building users can all be market-driven, and have a significant impact, but a systemic transformation of the built environment is unlikely to happen until governments establish a policy framework that rewards life-cycle approaches to energy efficiency in the building sector. To what degree of success has the project facilitated energy efficiency policies for the transformation to a low-emission building sector in Jamaica.

(b) The project has created evidence of affordable and effective energy efficiency measures for buildings, addressing barriers held by key stakeholders on the technological and economic viability of such

technologies in Jamaica. Which opportunities exist, or have already been set in motion, that are likely to scale-up project outcomes within Jamaica and/or have a catalytic effect⁷ to other nations in the Caribbean?

(c) Based on the analysis of the Theory of Change at evaluation, what factors still present the highest risks to success in transitioning to net zero energy buildings in Jamaica post-project?

(d) Has the evaluation identified any **unintended** results (positive or negative) deriving from the project's implementation, and if so, what was it and how might it affect the intended project impact?

10. Evaluation Criteria

33. All evaluation criteria will be rated on a six-point scale. Sections A-I below, outline the scope of the criteria and a link to a table for recording the ratings is provided in Annex 1). A weightings table will be provided in excel format (link provided in Annex 1) to support the determination of an overall project rating. The set of evaluation criteria are grouped in nine categories: (A) Strategic Relevance; (B) Quality of Project Design; (C) Nature of External Context; (D) Effectiveness, which comprises assessments of the availability of outputs, achievement of outcomes and likelihood of impact; (E) Financial Management; (F) Efficiency; (G) Monitoring and Reporting; (H) Sustainability; and (I) Factors Affecting Project Performance. The evaluation consultant(s) can propose other evaluation criteria as deemed appropriate.

A. Strategic Relevance

34. The evaluation will assess the extent to which the activity is suited to the priorities and policies of the donors, implementing regions/countries and the target beneficiaries. The evaluation will include an assessment of the project's relevance in relation to UNEP's mandate and its alignment with UNEP's policies and strategies at the time of project approval. Under strategic relevance an assessment of the complementarity of the project with other interventions addressing the needs of the same target groups will be made. This criterion comprises four elements:

35. In line with the UNEP Evaluation Policy⁸ and the UNEP Programme Manual⁹, the Terminal Evaluation is undertaken at completion of the project to assess project performance (in terms of relevance, effectiveness and efficiency), and determine outcomes and impacts (actual and potential) stemming from the project, including their sustainability. The evaluation has two primary purposes: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote operational improvement, learning and knowledge sharing through results and lessons learned among UNEP and the main project partners (see para 21.) Therefore, the evaluation will identify lessons of operational relevance for future project formulation and implementation, especially for the second phase of the project, where applicable.

36. The evaluation should assess the project's alignment with the MTS and POW under which the project was approved and include, in its narrative, reflections on the scale and scope of any contributions made to the planned results reflected in the relevant MTS and POW. UNEP strategic priorities include the Bali Strategic Plan for Technology Support and Capacity Building¹⁰ (BSP) and South-South Cooperation (S-SC). The BSP relates to the capacity of governments to: comply with international agreements and obligations at the national level; promote, facilitate and finance environmentally sound technologies and to strengthen frameworks for developing coherent international environmental policies. S-SC is regarded as the exchange of resources, technology and knowledge between developing countries.

i. Alignment to Donor/GEF/Partner Strategic Priorities

37. Donor, including GEF, strategic priorities will vary across interventions. GEF priorities are specified in published programming priorities and focal area strategies. The Evaluation will assess the extent to which the project is suited to, or responding to, donor priorities. In some cases, alignment with donor priorities may be a fundamental part of project design and grant approval processes while in others, for example, instances of 'softly-earmarked' funding, such alignment may be more of an assumption that should be assessed.

⁷ A catalytic effect is one in which desired changes take place beyond the initial scope of a project (i.e. the take up of change is faster than initially expected or change is taken up in areas/sectors or by groups, outside the project's initial design). Scaling up refers to an initiative, or one of its components, being adopted on a much larger scale, but in a very similar context (e.g a small scale, localized, pilot being adopted at a larger, perhaps national, scale). Replication refers more to approaches being repeated or lessons being explicitly applied in new/different contexts e.g. other geographic areas, different target groups etc. Effective replication typically requires some form of revision or adaptation to the new context. It is possible to replicate at either the same or a different scale.

⁸ <https://www.unenvironment.org/about-un-environment/evaluation-office/policies-and-strategies>

⁹ <https://wecollaborate.unep.org>

¹⁰ <http://www.unep.fr/ozonaction/about/bsp.htm>

ii. Relevance to Global, Regional, Sub-regional and National Environmental Priorities

38. The evaluation will assess the alignment of the project with global priorities such as the SDGs and Agenda 2030. The extent to which the intervention is suited, or responding to, the stated environmental concerns and needs of the countries, sub-regions or regions where it is being implemented will be considered. Examples may include: national or sub-national development plans, poverty reduction strategies or Nationally Appropriate Mitigation Action (NAMA) plans or regional agreements etc. Within this section consideration will be given to whether the needs of all beneficiary groups are being met and reflects the current policy priority to leave no one behind.

iii. Complementarity with Existing Interventions/Coherence¹¹

39. An assessment will be made of how well the project, either at design stage or during the project inception or mobilization¹², took account of ongoing and planned initiatives (under the same sub-programme, other UNEP sub-programmes, or being implemented by other agencies within the same country, sector or institution) that address similar needs of the same target groups. The evaluation will consider if the project team, in collaboration with Regional Offices and Sub-Programme Coordinators, made efforts to ensure their own intervention was complementary to other interventions, optimized any synergies and avoided duplication of effort. Examples may include UN Development Assistance Frameworks or One UN programming. Linkages with other interventions should be described and instances where UNEP's comparative advantage has been particularly well applied should be highlighted.

Factors affecting this criterion may include:

- Stakeholders' participation and cooperation
- Responsiveness to human rights and gender equity
- Country ownership and driven-ness

B. Quality of Project Design

40. The quality of project design is assessed using an agreed template during the evaluation inception phase, ratings are attributed to identified criteria and an overall Project Design Quality rating is established (www.unenvironment.org/about-un-environment/our-evaluation-approach/templates-and-tools). This overall Project Design Quality rating is entered in the final evaluation ratings table as item B. In the Main Evaluation Report a summary of the project's strengths and weaknesses at design stage is included, while the complete Project Design Quality template is annexed in the Inception Report.

Factors affecting this criterion may include (at the design stage):

- Stakeholders participation and cooperation
- Responsiveness to human rights and gender equity

C. Nature of External Context

41. At evaluation inception stage a rating is established for the project's external operating context (considering the prevalence of conflict, natural disasters and political upheaval¹³). This rating is entered in the final evaluation ratings table as item C. Where a project has been rated as facing either an Unfavourable or Highly Unfavourable external operating context, and/or a negative external event has occurred during project implementation, the ratings for Effectiveness, Efficiency and/or Sustainability may be increased at the discretion of the evaluation consultant and Evaluation Manager together. A justification for such an increase must be given.

D. Effectiveness

i. Availability of Outputs¹⁴

42. The evaluation will assess the project's success in producing the programmed outputs and achieving milestones as per the project design document (ProDoc). Any *formal* modifications/revisions made during

¹¹ This sub-category is consistent with the new criterion of 'Coherence' introduced by the OECD-DAC in 2019.

¹² A project's inception or mobilization period is understood as the time between project approval and first disbursement. Complementarity during project implementation is considered under Efficiency, see below.

¹³ Note that 'political upheaval' does not include regular national election cycles, but unanticipated unrest or prolonged disruption. The potential delays or changes in political support that are often associated with the regular national election cycle should be part of the project's design and addressed through adaptive management by the project team.

¹⁴ Outputs are the availability (for intended beneficiaries/users) of new products and services and/or gains in knowledge, abilities and awareness of individuals or within institutions (UNEP, 2019)

project implementation will be considered part of the project design. Where the project outputs are inappropriately or inaccurately stated in the ProDoc, reformulations may be necessary in the reconstruction of the TOC. In such cases a table should be provided showing the original and the reformulation of the outputs for transparency. The availability of outputs will be assessed in terms of both quantity and quality, and the assessment will consider their ownership by, and usefulness to, intended beneficiaries and the timeliness of their provision. It is noted that emphasis is placed on the performance of those outputs that are most important to achieve outcomes. The evaluation will briefly explain the reasons behind the success or shortcomings of the project in delivering its programmed outputs and meeting expected quality standards.

Factors affecting this criterion may include:

- Preparation and readiness
- Quality of project management and supervision¹⁵

ii. Achievement of Project Outcomes¹⁶

43. The achievement of project outcomes is assessed as performance against the project outcomes as defined in the reconstructed¹⁷ Theory of Change. These are outcomes that are intended to be achieved by the end of the project timeframe and within the project's resource envelope. Emphasis is placed on the achievement of project outcomes that are most important for attaining intermediate states. As with outputs, a table can be used where substantive amendments to the formulation of project outcomes is necessary. The evaluation should report evidence of attribution between UNEP's intervention and the project outcomes. In cases of normative work or where several actors are collaborating to achieve common outcomes, evidence of the nature and magnitude of UNEP's 'substantive contribution' should be included and/or 'credible association' established between project efforts and the project outcomes realised.

Factors affecting this criterion may include:

- Quality of project management and supervision
- Stakeholders' participation and cooperation
- Responsiveness to human rights and gender equity
- Communication and public awareness

iii. Likelihood of Impact

44. Based on the articulation of long-lasting effects in the reconstructed TOC (*i.e. from project outcomes, via intermediate states, to impact*), the evaluation will assess the likelihood of the intended, positive impacts becoming a reality. Project objectives or goals should be incorporated in the TOC, possibly as intermediate states or long-lasting impacts. The Evaluation Office's approach to the use of TOC in project evaluations is outlined in a guidance note available on the Evaluation Office website, <https://www.unenvironment.org/about-unenvironment/evaluation> and is supported by an excel-based flow chart, 'Likelihood of Impact Assessment Decision Tree'. Essentially the approach follows a 'likelihood tree' from project outcomes to impacts, taking account of whether the assumptions and drivers identified in the reconstructed TOC held. Any unintended positive effects should also be identified and their causal linkages to the intended impact described.

45. The evaluation will also consider the likelihood that the intervention may lead, or contribute to, unintended negative effects (e.g. will vulnerable groups such as those living with disabilities and/or women and children, be disproportionately affected by the project?). Some of these potential negative effects may have been identified in the project design as risks or as part of the analysis of Environmental, Social and Economic Safeguards.¹⁸

46. The evaluation will consider the extent to which the project has played a catalytic role or has promoted scaling up and/or replication as part of its Theory of Change and as factors that are likely to contribute to longer term impact.

¹⁵ In some cases 'project management and supervision' will refer to the supervision and guidance provided by UNEP to implementing partners and national governments while in others, specifically for GEF funded projects, it will refer to the project management performance of the executing agency and the technical backstopping provided by UNEP.

¹⁶ Outcomes are the use (*i.e. uptake, adoption, application*) of an output by intended beneficiaries, observed as changes in institutions or behavior, attitude or condition (UNEP, 2019)

¹⁷ All submitted UNEP project documents are required to present a Theory of Change with all submitted project designs. The level of 'reconstruction' needed during an evaluation will depend on the quality of this initial TOC, the time that has lapsed between project design and implementation (which may be related to securing and disbursing funds) and the level of any formal changes made to the project design.

¹⁸ Further information on Environmental, Social and Economic Safeguards (ESES) can be found at <http://wedocs.unep.org/handle/20.500.11822/8718>

47. Ultimately UNEP and all its partners aim to bring about benefits to the environment and human well-being. Few projects are likely to have impact statements that reflect such long-term or broad-based changes. However, the evaluation will assess the likelihood of the project to make a substantive contribution to the long-lasting changes represented by the Sustainable Development Goals and/or the intermediate-level results reflected in UNEP's Expected Accomplishments and the strategic priorities of funding partners.

Factors affecting this criterion may include:

- Quality of Project Management and Supervision (including adaptive management)
- Stakeholders participation and cooperation
- Responsiveness to human rights and gender equity
- Country ownership and driven-ness
- Communication and public awareness

E. Financial Management

48. Financial management will be assessed under three themes: *adherence* to UNEP's financial policies and procedures, *completeness* of financial information and *communication* between financial and project management staff. The evaluation will establish the actual spend across the life of the project of funds secured from all donors. This expenditure will be reported, where possible, at output level and will be compared with the approved budget. The evaluation will verify the application of proper financial management standards and adherence to UNEP's financial management policies. Any financial management issues that have affected the timely delivery of the project or the quality of its performance will be highlighted. The evaluation will record where standard financial documentation is missing, inaccurate, incomplete or unavailable in a timely manner. The evaluation will assess the level of communication between the Project/Task Manager and the Fund Management Officer as it relates to the effective delivery of the planned project and the needs of a responsive, adaptive management approach.

Factors affecting this criterion may include:

- Preparation and readiness
- Quality of project management and supervision

F. Efficiency

49. The evaluation will assess the extent to which the project delivered maximum results from the given resources. This will include an assessment of the cost-effectiveness and timeliness of project execution. Focussing on the translation of inputs into outputs, cost-effectiveness is the extent to which an intervention has achieved, or is expected to achieve, its results at the lowest possible cost. Timeliness refers to whether planned activities were delivered according to expected timeframes as well as whether events were sequenced efficiently. The evaluation will also assess to what extent any project extension could have been avoided through stronger project management and identify any negative impacts caused by project delays or extensions. The evaluation will describe any cost or time-saving measures put in place to maximise results within the secured budget and agreed project timeframe and consider whether the project was implemented in the most efficient way compared to alternative interventions or approaches.

50. The evaluation will give special attention to efforts made by the project teams during project implementation to make use of/build upon pre-existing institutions, agreements and partnerships, data sources, synergies and complementarities¹⁹ with other initiatives, programmes and projects etc. to increase project efficiency. The evaluation will also consider the extent to which the management of the project minimised UNEP's environmental footprint.

51. The factors underpinning the need for any project extensions will also be explored and discussed. As management or project support costs cannot be increased in cases of 'no cost extensions', such extensions represent an increase in unstated costs to implementing parties.

Factors affecting this criterion may include:

- Preparation and readiness (e.g. timeliness)
- Quality of project management and supervision
- Stakeholders participation and cooperation

¹⁹ Complementarity with other interventions during project design, inception or mobilization is considered under Strategic Relevance above.

G. Monitoring and Reporting

52. The evaluation will assess monitoring and reporting across three sub-categories: monitoring design and budgeting, monitoring implementation and project reporting.

i. Monitoring Design and Budgeting

53. Each project should be supported by a sound monitoring plan that is designed to track progress against SMART²⁰ results towards the provision of the project's outputs and achievement of project outcomes, including at a level disaggregated by gender, marginalisation or vulnerability, including those living with disabilities.. In particular, the evaluation will assess the relevance and appropriateness of the project indicators as well as the methods used for tracking progress against them as part of conscious results-based management. The evaluation will assess the quality of the design of the monitoring plan as well as the funds allocated for its implementation. The adequacy of resources for mid-term and terminal evaluation/review should be discussed if applicable.

ii. Monitoring of Project Implementation

54. The evaluation will assess whether the monitoring system was operational and facilitated the timely tracking of results and progress towards projects objectives throughout the project implementation period. This assessment will include consideration of whether the project gathered relevant and good quality baseline data that is accurately and appropriately documented. This should include monitoring the representation and participation of disaggregated groups (including gendered, marginalised or vulnerable groups, such as those living with disabilities) in project activities. It will also consider the quality of the information generated by the monitoring system during project implementation and how it was used to adapt and improve project execution, achievement of outcomes and ensure sustainability. The evaluation should confirm that funds allocated for monitoring were used to support this activity.

iii. Project Reporting

55. UNEP has a centralised project information management system (Anubis) in which project managers upload six-monthly progress reports against agreed project milestones. This information will be provided to the Evaluation Consultant(s) by the Evaluation Manager. Some projects have additional requirements to report regularly to funding partners, which will be supplied by the project team (e.g. the Project Implementation Reviews and Tracking Tool for GEF-funded projects). The evaluation will assess the extent to which both UNEP and donor reporting commitments have been fulfilled. Consideration will be given as to whether reporting has been carried out with respect to the effects of the initiative on disaggregated groups.

Factors affecting this criterion may include:

- Quality of project management and supervision
- Responsiveness to human rights and gender equity (e.g. disaggregated indicators and data)

H. Sustainability

56. Sustainability²¹ is understood as the probability of project outcomes being maintained and developed after the close of the intervention. The evaluation will identify and assess the key conditions or factors that are likely to undermine or contribute to the endurance of achieved project outcomes (i.e. 'assumptions' and 'drivers'). Some factors of sustainability may be embedded in the project design and implementation approaches while others may be contextual circumstances or conditions that evolve over the life of the intervention. Where applicable an assessment of bio-physical factors that may affect the sustainability of project outcomes may also be included.

i. Socio-political Sustainability

57. The evaluation will assess the extent to which social or political factors support the continuation and further development of project outcomes. It will consider the level of ownership, interest and commitment among government and other stakeholders to take the project achievements forwards. In particular the evaluation will consider whether individual capacity development efforts are likely to be sustained.

²⁰ SMART refers to results that are specific, measurable, achievable, relevant and time-oriented. Indicators help to make results measurable.

²¹ As used here, 'sustainability' means the long-term maintenance of outcomes and consequent impacts, whether environmental or not. This is distinct from the concept of sustainability in the terms 'environmental sustainability' or 'sustainable development', which imply 'not living beyond our means' or 'not diminishing global environmental benefits' (GEF STAP Paper, 2019, *Achieving More Enduring Outcomes from GEF Investment*)

ii. Financial Sustainability

58. Some project outcomes, once achieved, do not require further financial inputs, e.g. the adoption of a revised policy. However, in order to derive a benefit from this outcome further management action may still be needed e.g. to undertake actions to enforce the policy. Other project outcomes may be dependent on a continuous flow of action that needs to be resourced for them to be maintained, e.g. continuation of a new resource management approach. The evaluation will assess the extent to which project outcomes are dependent on future funding for the benefits they bring to be sustained. Secured future funding is only relevant to financial sustainability where the project's outcomes have been extended into a future project phase. Even where future funding has been secured, the question still remains as to whether the project outcomes are financially sustainable.

iii. Institutional Sustainability

59. The evaluation will assess the extent to which the sustainability of project outcomes (especially those relating to policies and laws) is dependent on issues relating to institutional frameworks and governance. It will consider whether institutional achievements such as governance structures and processes, policies, sub-regional agreements, legal and accountability frameworks etc. are robust enough to continue delivering the benefits associated with the project outcomes after project closure. In particular, the evaluation will consider whether institutional capacity development efforts are likely to be sustained.

Factors affecting this criterion may include:

- Stakeholders participation and cooperation
- Responsiveness to human rights and gender equity (e.g. where interventions are not inclusive, their sustainability may be undermined)
- Communication and public awareness
- Country ownership and driven-ness

I. Factors Affecting Project Performance and Cross-Cutting Issues

(These factors are rated in the ratings table but are discussed within the Main Evaluation Report as cross-cutting themes as appropriate under the other evaluation criteria, above. Where the issues have not been addressed under other evaluation criteria, the consultant(s) will provide summary sections under the following headings.)

i. Preparation and Readiness

60. This criterion focuses on the inception or mobilisation stage of the project (i.e. the time between project approval and first disbursement). The evaluation will assess whether appropriate measures were taken to either address weaknesses in the project design or respond to changes that took place between project approval, the securing of funds and project mobilisation. In particular the evaluation will consider the nature and quality of engagement with stakeholder groups by the project team, the confirmation of partner capacity and development of partnership agreements as well as initial staffing and financing arrangements. *(Project preparation is included in the template for the assessment of Project Design Quality).*

ii. Quality of Project Management and Supervision

61. In some cases 'project management and supervision' will refer to the supervision and guidance provided by UNEP to implementing partners and national governments while in others, specifically for GEF funded projects, it will refer to the project management performance of the executing agency and the technical backstopping and supervision provided by UNEP.

62. The evaluation will assess the effectiveness of project management with regard to: providing leadership towards achieving the planned outcomes; managing team structures; maintaining productive partner relationships (including Steering Groups etc.); maintaining project relevance within changing external and strategic contexts; communication and collaboration with UNEP colleagues; risk management; use of problem-solving; project adaptation and overall project execution. Evidence of adaptive management should be highlighted.

iii. Stakeholder Participation and Cooperation

63. Here the term 'stakeholder' should be considered in a broad sense, encompassing all project partners, duty bearers with a role in delivering project outputs and target users of project outputs and any other collaborating agents external to UNEP and the Executing Agency. The assessment will consider the quality and effectiveness of all forms of communication and consultation with stakeholders throughout the project life and the support given to maximise collaboration and coherence between various stakeholders, including

sharing plans, pooling resources and exchanging learning and expertise. The inclusion and participation of all differentiated groups, including gender groups should be considered.

iv. Responsiveness to Human Rights and Gender Equity

64. The evaluation will ascertain to what extent the project has applied the UN Common Understanding on the human rights-based approach (HRBA) and the UN Declaration on the Rights of Indigenous People. Within this human rights context the evaluation will assess to what extent the intervention adheres to UNEP's Policy and Strategy for Gender Equality and the Environment²².

65. In particular the evaluation will consider to what extent project implementation and monitoring have taken into consideration: (i) possible inequalities (especially those related to gender) in access to, and the control over, natural resources; (ii) specific vulnerabilities of disadvantaged groups (especially women, youth and children and those living with disabilities) to environmental degradation or disasters; and (iii) the role of disadvantaged groups (especially those related to gender) in mitigating or adapting to environmental changes and engaging in environmental protection and rehabilitation.

v. Environmental and Social Safeguards

66. UNEP projects address environmental and social safeguards primarily through the process of environmental and social screening at the project approval stage, risk assessment and management (avoidance, minimization, mitigation or, in exceptional cases, offsetting) of potential environmental and social risks and impacts associated with project and programme activities. The evaluation will confirm whether UNEP requirements²³ were met to: *review* risk ratings on a regular basis; *monitor* project implementation for possible safeguard issues; *respond* (where relevant) to safeguard issues through risk avoidance, minimization, mitigation or offsetting and *report* on the implementation of safeguard management measures taken. UNEP requirements for proposed projects to be screened for any safeguarding issues; for sound environmental and social risk assessments to be conducted and initial risk ratings to be assigned are evaluated above under Quality of Project Design).

67. The evaluation will also consider the extent to which the management of the project minimised UNEP's environmental footprint.

vi. Country Ownership and Driven-ness

68. The evaluation will assess the quality and degree of engagement of government / public sector agencies in the project. While there is some overlap between Country Ownership and Institutional Sustainability, this criterion focuses primarily on the forward momentum of the intended projects results, ie. either a) moving forwards from outputs to project outcomes or b) moving forward from project outcomes towards intermediate states. The evaluation will consider the involvement not only of those directly involved in project execution and those participating in technical or leadership groups, but also those official representatives whose cooperation is needed for change to be embedded in their respective institutions and offices (e.g. representatives from multiple sectors or relevant ministries beyond Ministry of Environment). This factor is concerned with the level of ownership generated by the project over outputs and outcomes and that is necessary for long term impact to be realised. Ownership should extend to all gendered and marginalised groups.

vii. Communication and Public Awareness

69. The evaluation will assess the effectiveness of: a) communication of learning and experience sharing between project partners and interested groups arising from the project during its life and b) public awareness activities that were undertaken during the implementation of the project to influence attitudes or shape behaviour among wider communities and civil society at large. The evaluation should consider whether existing communication channels and networks were used effectively, including meeting the differentiated needs of gendered or marginalised groups, and whether any feedback channels were established. Where knowledge sharing platforms have been established under a project the evaluation will comment on the

²²The Evaluation Office notes that Gender Equality was first introduced in the UNEP Project Review Committee Checklist in 2010 and, therefore, provides a criterion rating on gender for projects approved from 2010 onwards. Equally, it is noted that policy documents, operational guidelines and other capacity building efforts have only been developed since then and have evolved over time. https://wedocs.unep.org/bitstream/handle/20.500.11822/7655/-Gender_equality_and_the_environment_Policy_and_strategy-2015Gender_equality_and_the_environment_policy_and_strategy.pdf.pdf?sequence=3&isAllowed=y

²³ For the review of project concepts and proposals, the Safeguard Risk Identification Form (SRIF) was introduced in 2019 and replaced the Environmental, Social and Economic Review note (ESERN), which had been in place since 2016. In GEF projects safeguards have been considered in project designs since 2011.

sustainability of the communication channel under either socio-political, institutional or financial sustainability, as appropriate.

Section 3. EVALUATION APPROACH, METHODS AND DELIVERABLES

70. The Terminal Evaluation will be an in-depth evaluation using a participatory approach whereby key stakeholders are kept informed and consulted throughout the evaluation process. Both quantitative and qualitative evaluation methods will be used as appropriate to determine project achievements against the expected outputs, outcomes and impacts. It is highly recommended that the consultant(s) maintains close communication with the project team and promotes information exchange throughout the evaluation implementation phase in order to increase their (and other stakeholder) ownership of the evaluation findings. Where applicable, the consultant(s) will provide a geo-referenced map that demarcates the area covered by the project and, where possible, provide geo-reference photographs of key intervention sites (e.g. sites of habitat rehabilitation and protection, pollution treatment infrastructure, etc.)

71. The findings of the evaluation will be based on the following:

(a) A **desk review** of:

- Relevant background documentation, inter alia [list];
- Project design documents (including minutes of the project design review meeting at approval); Annual Work Plans and Budgets or equivalent, revisions to the project (Project Document Supplement), the logical framework and its budget;
- Project reports such as six-monthly progress and financial reports, progress reports from collaborating partners, meeting minutes, relevant correspondence and including the Project Implementation Reviews and Tracking Tool etc.;
- Project outputs (e.g. Energy audits, energy assessments, building designs, training/workshop materials, guideline documents, draft policies, etc.);

(b) **Interviews** (individual or in group) with:

- UNEP Task Manager (TM);
- Project management team, including the Project Manager within the Executing Agency;
- UNEP Fund Management Officer (FMO);
- Portfolio Manager and Sub-Programme Coordinator, where appropriate;
- Project partners (see list in para 21. above)
- Relevant resource persons;
- Representatives from civil society and specialist groups (such as private sector associations, Incorporated Masterbuilders Association of Jamaica, the Jamaica Institution of Engineers, etc).

(c) **Surveys** (is deemed appropriate)

(d) **Field visits** (the evaluation will include a field mission to Jamaica, subject to Covid-19 Pandemic restrictions on travel and social interaction)

(e) Other data collection tools (as may be determined during the evaluation inception phase)

11. Evaluation Deliverables and Review Procedures

72. The evaluation consultant will prepare:

- **Inception Report:** (See Annex 1 for links to all templates, tables and guidance notes) containing an assessment of project design quality, a draft reconstructed Theory of Change of the project, project stakeholder analysis, evaluation framework and a tentative evaluation schedule.
- **Preliminary Findings Note:** typically in the form of a PowerPoint presentation, the sharing of preliminary findings is intended to support the participation of the project team, act as a means to ensure all information sources have been accessed and provide an opportunity to verify emerging findings. In the case of highly strategic project/portfolio evaluations or evaluations with an Evaluation Reference Group, the preliminary findings may be presented as a word document for review and comment.
- **Draft and Final Evaluation Report:** (see links in Annex 1) containing an executive summary that can act as a stand-alone document; detailed analysis of the evaluation findings organised by evaluation criteria and supported with evidence; lessons learned and recommendations and an annotated ratings table.

73. An **Evaluation Brief**, (a 2-page overview of the evaluand and key evaluation findings) for wider dissemination through the UNEP website may be required. This will be discussed with the Evaluation Manager no later than during the finalization of the Inception Report.

74. **Review of the draft evaluation report.** The evaluation consultant will submit a draft report to the Evaluation Manager and revise the draft in response to their comments and suggestions. Once a draft of adequate quality has been peer-reviewed and accepted, the Evaluation Manager will share the cleared draft report with the Task Manager and Project Manager, who will alert the Evaluation Manager in case the report contains any blatant factual errors. The Evaluation Manager will then forward revised draft report (corrected by the evaluation consultant(s) where necessary) to other project stakeholders, for their review and comments. Stakeholders may provide feedback on any errors of fact and may highlight the significance of such errors in any conclusions as well as providing feedback on the proposed recommendations and lessons. Any comments or responses to draft reports will be sent to the Evaluation Manager for consolidation. The Evaluation Manager will provide all comments to the evaluation consultant for consideration in preparing the final report, along with guidance on areas of contradiction or issues requiring an institutional response.

75. Based on a careful review of the evidence collated by the evaluation consultant and the internal consistency of the report, the Evaluation Manager will provide an assessment of the ratings in the final evaluation report. Where there are differences of opinion between the evaluator and the Evaluation Manager on project ratings, both viewpoints will be clearly presented in the final report. The Evaluation Office ratings will be considered the final ratings for the project.

76. The Evaluation Manager will prepare a **quality assessment** of the first draft of the main evaluation report, which acts as a tool for providing structured feedback to the evaluation consultant. The quality of the final report will be assessed and rated against the criteria specified in template listed in Annex 1 and this assessment will be appended to the Final Evaluation Report.

77. At the end of the evaluation process, the Evaluation Office will prepare a **Recommendations Implementation Plan** in the format of a table, to be completed and updated at regular intervals by the Task Manager. The Evaluation Office will track compliance against this plan on a six-monthly basis for a maximum of 18 months.

12. The Evaluation Consultant¹

78. For this evaluation, one independent consultant will work under the overall responsibility of the Evaluation Office represented by an Evaluation Manager (Pauline Marima), in consultation with the UNEP Task Manager (Asher Lessels), Climate Mitigation Unit Fund Management Officer (Leena Darlington), Head of Energy & Climate Branch (Mark Radka), Coordinator of UNEP Sub-programme on Climate Change (Niklas Hagelberg), UNEP Head of the Caribbean Sub-regional Office (Vincent Sweeney), Regional Coordinator of Climate Change, ROLAC (Gustavo Manez), Project Manager (Kevin Rodriguez) and the Project Director, representative of UWI (Professor Anthony Clayton). The consultant will liaise with the Evaluation Manager on any procedural and methodological matters related to the evaluation. It is, however, the consultant's individual responsibility to arrange for their travel, visa, obtain documentary evidence, plan meetings with stakeholders, organize online surveys, and any other logistical matters related to the assignment. The UNEP Task Manager and Project Manager will, where possible, provide logistical support (formal introductions, meetings, etc.) allowing the consultant to conduct the evaluation as efficiently and independently as possible.

79. The consultant will be hired over a period of 8 months (September 2021 to April 2022) during which time the evaluation deliverables listed in Section 11 'Evaluation Deliverables' above should be submitted.

80. S/he should have: an advanced university degree, experience in evaluation of programs and projects, and at least 5 years' working experience in the area of climate change and energy efficiency. Knowledge of English language along with excellent writing skills in English is required. Experience in managing partnerships, knowledge management and communication is desirable for all evaluation consultants.

Specific Responsibilities:

81. The Consultant will be responsible, in close consultation with the Evaluation Office of UNEP, for overall management of the evaluation and timely delivery of its outputs, described in Section 11 Evaluation Deliverables, above. The consultant will ensure that all evaluation criteria and questions are adequately covered. S/he will be responsible for the evaluation design, data collection and analysis, and report-writing. More specifically:

Inception phase of the evaluation, including:

- preliminary desk review and introductory interviews with project staff;
- draft the reconstructed Theory of Change of the project;
- prepare the evaluation framework;
- develop the desk review, interview protocols, and data collection and analysis tools;
- plan the evaluation schedule;
- prepare the Inception Report, incorporating comments received from the Evaluation Office.

Data collection and analysis phase of the evaluation, including:

- conduct further desk review and in-depth interviews with project implementing and executing agencies, project partners and project stakeholders;
- conduct an evaluation mission to **Jamaica** to visit the project locations, interview project partners and stakeholders, including a good representation of private sector stakeholders. Ensure independence of the evaluation and confidentiality of evaluation interviews.
- regularly report back to the Evaluation Office on progress and inform of any possible problems or issues encountered and;
- keep the Project/Task Manager informed of the evaluation progress and engage the Project/Task Manager in discussions on emerging findings throughout the evaluation process.

Reporting phase, including:

- draft the Main Evaluation Report, ensuring that the evaluation report is complete, coherent and consistent with the Evaluation Office guidelines both in substance and style;
- liaise with the Evaluation Office on comments received and finalize the Main Evaluation Report, ensuring that comments are taken into account
- prepare a Response to Comments annex for the main report, listing those comments not accepted by the Evaluation Consultant and indicating the reason for the rejection; and
- prepare a 2-page summary of the key evaluation findings and lessons;

Managing relations, including:

- maintain a positive relationship with evaluation stakeholders, ensuring that the evaluation process is as participatory as possible but at the same time maintains its independence;
- communicate in a timely manner with the Evaluation Office on any issues requiring its attention and intervention.

13. Schedule of the evaluation

82. The table below presents the tentative schedule for the evaluation.

Table 5. Tentative schedule for the evaluation

Milestone	Tentative schedule*
Consultant recruitment and hiring	September 2021
Kick-off meeting (online)	September 2021
Inception Report	October 2021
In-depth data collection and analysis, interviews and surveys	November 2021- January 2022
Field Mission (based on meeting arrangements and available budget)	December 2021
Draft report to UNEP (Evaluation Manager and Peer Reviewer)	January 2022
Draft Report shared with UNEP Task Manager and Project Team	February 2022
Draft Report shared with wider group of stakeholders	March 2022
Final Report	April 2022

*Allowances have been provided for incidental and unexpected delays

14. Contractual Arrangements

83. Evaluation consultant will be selected and recruited by the Evaluation Office of UNEP under an individual Special Service Agreement (SSA) on a "fees only" basis (see below). By signing the service contract with UNEP /UNON, the consultant certifies that they have not been associated with the design and

implementation of the project in any way which may jeopardize their independence and impartiality towards project achievements and project partner performance. In addition, they will not have any future interests (within six months after completion of the contract) with the project's executing or implementing units. All consultants are required to sign the Code of Conduct Agreement Form.

84. Fees will be paid on an instalment basis, paid on acceptance by the Evaluation Manager of expected key deliverables. The schedule of payment is as follows:

Table 6: Schedule of Payment for the consultant:

Deliverable	Percentage Payment
Approved Inception Report (document 9 in Annex 1)	30%
Approved Draft Main Evaluation Report (document 16 in Annex 1)	30%
Approved Final Main Evaluation Report	40%

85. Fees only contracts: Air tickets will be purchased by UNEP and 75% of the Daily Subsistence Allowance for each authorised travel mission will be paid up front. Local in-country travel will only be reimbursed where agreed in advance with the Evaluation Manager and on the production of acceptable receipts. Terminal expenses and residual DSA entitlements (25%) will be paid after mission completion.

86. The consultant may be provided with access to UNEP's Anubis information management system and if such access is granted, the consultant agrees not to disclose information from that system to third parties beyond information required for, and included in, the evaluation report.

87. In case the consultant is not able to provide the deliverables in accordance with these guidelines, and in line with the expected quality standards by the UNEP Evaluation Office, payment may be withheld at the discretion of the Director of the Evaluation Office until the consultants have improved the deliverables to meet UNEP's quality standards.

88. If the consultant fails to submit a satisfactory final product to UNEP in a timely manner, i.e. before the end date of their contract, the Evaluation Office reserves the right to employ additional human resources to finalize the report, and to reduce the consultant's fees by an amount equal to the additional costs borne by the Evaluation Office to bring the report up to standard.

ANNEX X. QUALITY ASSESSMENT OF THE EVALUATION REPORT

Evaluand Title:

LGGE Promoting Energy Efficiency and Renewable Energy in Buildings in Jamaica, GEF ID: 4167

All UNEP evaluations are subject to a quality assessment by the Evaluation Office. This is an assessment of the quality of the evaluation product (i.e. evaluation report) and is dependent on more than just the consultant's efforts and skills.

	UNEP Evaluation Office Comments	Final Report Rating
Substantive Report Quality Criteria		
<p>Quality of the Executive Summary:</p> <p>The Summary should be able to stand alone as an accurate summary of the main evaluation product. It should include a concise overview of the evaluation object; clear summary of the evaluation objectives and scope; overall evaluation rating of the project and key features of performance (strengths and weaknesses) against exceptional criteria (plus reference to where the evaluation ratings table can be found within the report); summary of the main findings of the exercise, including a synthesis of main conclusions (which include a summary response to key strategic evaluation questions), lessons learned and recommendations.</p>	<p>Final report:</p> <p>Though a bit long (7 pages), the executive summary is well structured and covers all the expected aspects.</p>	5
<p>I. Introduction</p> <p>A brief introduction should be given identifying, where possible and relevant, the following: institutional context of the project (sub-programme, Division, regions/countries where implemented) and coverage of the evaluation; date of PRC approval and project document signature); results frameworks to which it contributes (e.g. Expected Accomplishment in POW); project duration and start/end dates; number of project phases (where appropriate); implementing partners; total secured budget and whether the project has been evaluated in the past (e.g. mid-term, part of a synthesis evaluation, evaluated by another agency etc.)</p> <p>Consider the extent to which the introduction includes a concise statement of the purpose of the evaluation and the key intended audience for the findings?</p>	<p>Final report:</p> <p>The introduction contains all the required elements</p>	6
<p>II. Evaluation Methods</p> <p>A data collection section should include: a description of evaluation methods and information sources used, including the number and type of respondents; justification for methods used (e.g. qualitative/quantitative; electronic/face-to-face); any selection criteria used to identify respondents, case studies or sites/countries visited; strategies used to increase stakeholder engagement and consultation; details of how data were verified (e.g. triangulation, review by stakeholders etc.). Efforts to include the voices of different groups, e.g. vulnerable, gender, marginalised etc) should be described.</p> <p>Methods to ensure that potentially excluded groups (excluded by gender, vulnerability or marginalisation) are reached and their experiences captured effectively, should be made explicit in this section.</p> <p>The methods used to analyse data (e.g. scoring; coding; thematic analysis etc.) should be described.</p>	<p>Final report:</p> <p>The final version includes all the required elements including the limitations of the evaluation as well as the ethics and human right issues.</p>	6

<p>It should also address evaluation limitations such as: low or imbalanced response rates across different groups; gaps in documentation; extent to which findings can be either generalised to wider evaluation questions or constraints on aggregation/disaggregation; any potential or apparent biases; language barriers and ways they were overcome.</p> <p>Ethics and human rights issues should be highlighted including: how anonymity and confidentiality were protected, and strategies used to include the views of marginalised or potentially disadvantaged groups and/or divergent views. Is there an ethics statement? E.g. <i>Throughout the evaluation process and in the compilation of the Final Evaluation Report efforts have been made to represent the views of both mainstream and more marginalised groups. All efforts to provide respondents with anonymity have been made.</i></p>		
<p>III. The Project</p> <p>This section should include:</p> <ul style="list-style-type: none"> • <i>Context:</i> Overview of the main issue that the project is trying to address, its root causes and consequences on the environment and human well-being (i.e. synopsis of the problem and situational analyses). • <i>Results framework:</i> Summary of the project's results hierarchy as stated in the ProDoc (or as officially revised) • <i>Stakeholders:</i> Description of groups of targeted stakeholders organised according to relevant common characteristics • <i>Project implementation structure and partners:</i> A description of the implementation structure with diagram and a list of key project partners • <i>Changes in design during implementation:</i> Any key events that affected the project's scope or parameters should be described in brief in chronological order • <i>Project financing:</i> Completed tables of: (a) budget at design and expenditure by components (b) planned and actual sources of funding/co-financing 	<p>Final report:</p> <p>The context of the project in Jamaica is thorough and instructive. The project is well described.</p> <p>Clarifications on the PSC and PAC have been provided.</p>	6
<p>IV. Theory of Change</p> <p>The <i>TOC at Evaluation</i> should be presented clearly in both diagrammatic and narrative forms. Clear articulation of each major causal pathway is expected, (starting from outputs to long term impact), including explanations of all drivers and assumptions as well as the expected roles of key actors.</p> <p>This section should include a description of how the <i>TOC at Evaluation</i>¹¹⁵ was designed (who was involved etc.) and applied to the context of the project? Where the project results as stated in the project design documents (or formal revisions of the project design) are not an accurate reflection of the project's intentions or do not follow UNEP's definitions of different results levels, project results may need to be re-phrased or reformulated. In such cases, a summary of the project's results hierarchy should be presented for: a) the results as stated in the approved/revised Prodoc logframe/TOC and b) as formulated in the <i>TOC at Evaluation</i>. <i>The two results hierarchies should be presented as a two-column table to show clearly that, although wording and placement may have changed, the results 'goal posts' have not been 'moved'.</i> This table may have initially been presented in the Inception Report and should appear somewhere in the Main Review report.</p>	<p>Final report:</p> <p>The diagram has been made clearer. The narrative of the TOC is clear.</p>	6

¹¹⁵ During the Inception Phase of the evaluation process a *TOC at Evaluation Inception* is created based on the information contained in the approved project documents (these may include either logical framework or a TOC or narrative descriptions), formal revisions and annual reports etc. During the evaluation process this TOC is revised based on changes made during project intervention and becomes the *TOC at Evaluation*.

<p>V. Key Findings</p> <p>A. Strategic relevance: This section should include an assessment of the project’s relevance in relation to UNEP’s mandate and its alignment with UNEP’s policies and strategies at the time of project approval. An assessment of the complementarity of the project at design (or during inception/mobilisation¹¹⁶), with other interventions addressing the needs of the same target groups should be included. Consider the extent to which all four elements have been addressed:</p> <ul style="list-style-type: none"> i. Alignment to the UNEP Medium Term Strategy (MTS), Programme of Work (POW) and Strategic Priorities ii. Alignment to Donor/GEF/Partners Strategic Priorities iii. Relevance to Regional, Sub-regional and National Environmental Priorities iv. Complementarity with Existing Interventions 	<p>Final report: This criterion and all its sub-components are thoroughly assessed.</p>	6
<p>B. Quality of Project Design To what extent are the strength and weaknesses of the project design effectively <u>summarized</u>?</p>	<p>Final report: The analysis of the project design is good. New elements analysed during the Evaluation Phase are presented and amend the rating made during the Inception Phase. The strengths and the weaknesses of the project could have been more explicitly presented.</p>	5
<p>C. Nature of the External Context For projects where this is appropriate, key <u>external</u> features of the project’s implementing context that limited the project’s performance (e.g. conflict, natural disaster, political upheaval¹¹⁷), and how they affected performance, should be described.</p>	<p>Final report: Multiple relevant external elements are considered.</p>	6
<p>D. Effectiveness (i) Outputs and Project Outcomes: How well does the report present a well-reasoned, complete and evidence-based assessment of the a) availability of outputs, and b) achievement of project outcomes? How convincing is the discussion of attribution and contribution, as well as the constraints to attributing effects to the intervention? The effects of the intervention on differentiated groups, including those with specific needs due to gender, vulnerability or marginalisation, should be discussed explicitly.</p>	<p>Final report: All the required elements are presented. The strategic questions are assessed in this section.</p>	6
<p>(ii) Likelihood of Impact: How well does the report present an integrated analysis, guided by the causal pathways represented by the TOC, of all evidence relating to likelihood of impact? How well are change processes explained and the roles of key actors, as well as drivers and assumptions, explicitly discussed? Any unintended negative effects of the project should be discussed under Effectiveness, especially negative effects on disadvantaged groups.</p>	<p>Final report: The “Likelihood of Impact Assessment Decision Tree” could have been added as an Annex to justify further the rating.</p>	5

¹¹⁶ A project’s inception or mobilization period is understood as the time between project approval and first disbursement. Complementarity during project implementation is considered under Efficiency, see below.

¹¹⁷ Note that ‘political upheaval’ does not include regular national election cycles, but unanticipated unrest or prolonged disruption. The potential delays or changes in political support that are often associated with the regular national election cycle should be part of the project’s design and addressed through adaptive management of the project team.

<p>E. Financial Management</p> <p>This section should contain an integrated analysis of all dimensions evaluated under financial management and include a completed 'financial management' table.</p> <p>Consider how well the report addresses the following:</p> <ul style="list-style-type: none"> • <i>Adherence</i> to UNEP's financial policies and procedures • <i>completeness</i> of financial information, including the actual project costs (total and per activity) and actual co-financing used • <i>communication</i> between financial and project management staff 	<p>Final report:</p> <p>The financial management assessment is thorough.</p>	<p>6</p>
<p>F. Efficiency</p> <p>To what extent, and how well, does the report present a well-reasoned, complete and evidence-based assessment of efficiency under the primary categories of cost-effectiveness and timeliness including:</p> <ul style="list-style-type: none"> • Implications of delays and no cost extensions • Time-saving measures put in place to maximise results within the secured budget and agreed project timeframe • Discussion of making use during project implementation of/building on pre-existing institutions, agreements and partnerships, data sources, synergies and complementarities with other initiatives, programmes and projects etc. • The extent to which the management of the project minimised UNEP's environmental footprint. 	<p>Final report:</p> <p>Good</p>	<p>5</p>
<p>G. Monitoring and Reporting</p> <p>How well does the report assess:</p> <ul style="list-style-type: none"> • Monitoring design and budgeting (<i>including SMART results with measurable indicators, resources for MTE/R etc.</i>) • Monitoring of project implementation (<i>including use of monitoring data for adaptive management</i>) • Project reporting (<i>e.g. PIMS and donor reports</i>) 	<p>Final report:</p> <p>All the required elements are presented.</p>	<p>6</p>
<p>H. Sustainability</p> <p>How well does the evaluation identify and assess the key conditions or factors that are likely to undermine or contribute to the persistence of achieved project outcomes including:</p> <ul style="list-style-type: none"> • Socio-political Sustainability • Financial Sustainability • Institutional Sustainability 	<p>Final report:</p> <p>The different sustainability aspects are well understood.</p>	<p>6</p>
<p>I. Factors Affecting Performance</p> <p>These factors are <u>not</u> discussed in stand-alone sections but are integrated in criteria A-H as appropriate. Note that these are described in the Evaluation Criteria Ratings Matrix. To what extent, and how well, does the evaluation report cover the following cross-cutting themes:</p> <ul style="list-style-type: none"> • Preparation and readiness 	<p>Final report:</p> <p>All the factors affecting performance are understood and assessed according to UNEP Evaluation Office guidelines.</p>	<p>6</p>

<ul style="list-style-type: none"> • Quality of project management and supervision¹¹⁸ • Stakeholder participation and co-operation • Responsiveness to human rights and gender equality • Environmental and social safeguards • Country ownership and driven-ness • Communication and public awareness 		
<p>VI. Conclusions and Recommendations</p> <p>i) Quality of the conclusions: The key strategic questions should be clearly and succinctly addressed within the conclusions section. This includes providing the answers to the questions on Core Indicator Targets, stakeholder engagement, gender responsiveness, safeguards and knowledge management, required for the GEF portal.</p> <p>It is expected that the conclusions will highlight the main strengths and weaknesses of the project and connect them in a compelling story line. Human rights and gender dimensions of the intervention (e.g. how these dimensions were considered, addressed or impacted on) should be discussed explicitly. Conclusions, as well as lessons and recommendations, should be consistent with the evidence presented in the main body of the report.</p>	<p>Final report:</p> <p>The consultant chose to detailly answer the strategic questions in the Effectiveness criterion. The answers are summarized here in the conclusion. It clearly highlights the strengths and weaknesses of the project.</p>	6
<p>ii) Quality and utility of the lessons: Both positive and negative lessons are expected and duplication with recommendations should be avoided. Based on explicit evaluation findings, lessons should be rooted in real project experiences or derived from problems encountered and mistakes made that should be avoided in the future. Lessons are intended to be adopted any time they are deemed to be relevant in the future and must have the potential for wider application (replication and generalization) and use and should briefly describe the context from which they are derived and those contexts in which they may be useful.</p>	<p>Final report:</p> <p>The lessons learned do not duplicate the recommendations. Besides they cover a wide range of the project aspects.</p>	6
<p>iii) Quality and utility of the recommendations:</p> <p>To what extent are the recommendations proposals for specific action to be taken by identified people/position-holders to resolve concrete problems affecting the project or the sustainability of its results? They should be feasible to implement within the timeframe and resources available (including local capacities) and specific in terms of who would do what and when.</p> <p>At least one recommendation relating to strengthening the human rights and gender dimensions of UNEP interventions, should be given.</p> <p>Recommendations should represent a measurable performance target in order that the Evaluation Office can monitor and assess compliance with the recommendations.</p> <p>In cases where the recommendation is addressed to a third party, compliance can only be monitored and assessed where a contractual/legal agreement remains in place. Without such an agreement, the recommendation should be formulated to say that UNEP project staff should pass on the recommendation to the relevant third party in an effective or substantive manner. The</p>	<p>Final report:</p> <p>The recommendation table is well used. A limited number of recommendations is presented.</p>	5

¹¹⁸ In some cases 'project management and supervision' will refer to the supervision and guidance provided by UNEP to implementing partners and national governments while in others, specifically for GEF funded projects, it will refer to the project management performance of the executing agency and the technical backstopping provided by UNEP. This includes providing the answers to the questions on Core Indicator Targets, stakeholder engagement, gender responsiveness, safeguards and knowledge management, required for the GEF portal.

<p>effective transmission by UNEP of the recommendation will then be monitored for compliance.</p> <p>Where a new project phase is already under discussion or in preparation with the same third party, a recommendation can be made to address the issue in the next phase.</p>		
<p>VII. Report Structure and Presentation Quality</p>		
<p>i) Structure and completeness of the report: To what extent does the report follow the Evaluation Office guidelines? Are all requested Annexes included and complete?</p>	<p>Final report:</p> <p>The report is very well structured, it fully follows the Evaluation Office guidelines. There is no repetition or redundancy. All the requested Annexes are presented.</p>	<p>6</p>
<p>ii) Quality of writing and formatting: Consider whether the report is well written (clear English language and grammar) with language that is adequate in quality and tone for an official document? Do visual aids, such as maps and graphs convey key information? Does the report follow Evaluation Office formatting guidelines?</p>	<p>Final report:</p> <p>The report is very well written and easy to read. It follows EO formatting guidelines</p>	<p>6</p>
<p>OVERALL REPORT QUALITY RATING</p>		<p>5.75</p>

A number rating 1-6 is used for each criterion: Highly Satisfactory = 6, Satisfactory = 5, Moderately Satisfactory = 4, Moderately Unsatisfactory = 3, Unsatisfactory = 2, Highly Unsatisfactory = 1. The overall quality of the evaluation report is calculated by taking the mean score of all rated quality criteria.

At the end of the evaluation, compliance of the evaluation process against the agreed standard procedures is assessed, based on the table below. All questions with negative compliance must be explained further in the table below.

Evaluation Process Quality Criteria	Compliance	
	Yes	No
Independence:		
1. Were the Terms of Reference drafted and finalised by the Evaluation Office?	Y	
2. Were possible conflicts of interest of proposed Evaluation Consultant(s) appraised and addressed in the final selection?	Y	
3. Was the final selection of the Evaluation Consultant(s) made by the Evaluation Office?	Y	
4. Was the evaluator contracted directly by the Evaluation Office?	Y	
5. Was the Evaluation Consultant given direct access to identified external stakeholders in order to adequately present and discuss the findings, as appropriate?	Y	
6. Did the Evaluation Consultant raise any concerns about being unable to work freely and without interference or undue pressure from project staff or the Evaluation Office?		N
7. If Yes to Q6: Were these concerns resolved to the mutual satisfaction of both the Evaluation Consultant and the Evaluation Manager?		
Financial Management:		
8. Was the evaluation budget approved at project design available for the evaluation?	Y	
9. Was the final evaluation budget agreed and approved by the Evaluation Office?	Y	
10. Were the agreed evaluation funds readily available to support the payment of the evaluation contract throughout the payment process?	Y	
Timeliness:		
11. If a Terminal Evaluation: Was the evaluation initiated within the period of six months before or after project operational completion? Or, if a Mid Term Evaluation: Was the evaluation initiated within a six-month period prior to the project's mid-point?		N
12. Were all deadlines set in the Terms of Reference respected, as far as unforeseen circumstances allowed?	Y	
13. Was the inception report delivered and reviewed/approved prior to commencing any travel?	Y	
Project's engagement and support:		
14. Did the project team, Sub-Programme Coordinator and identified project stakeholders provide comments on the evaluation Terms of Reference?	Y	
15. Did the project make available all required/requested documents?	Y	
16. Did the project make all financial information (and audit reports if applicable) available in a timely manner and to an acceptable level of completeness?	Y	
17. Was adequate support provided by the project to the evaluator(s) in planning and conducting evaluation missions?	Y	
18. Was close communication between the Evaluation Consultant, Evaluation Office and project team maintained throughout the evaluation?	Y	
19. Were evaluation findings, lessons and recommendations adequately discussed with the project team for ownership to be established?	Y	
20. Did the project team, Sub-Programme Coordinator and any identified project stakeholders provide comments on the draft evaluation report?	Y	
Quality assurance:		

21. Were the evaluation Terms of Reference, including the key evaluation questions, peer-reviewed?	Y	
22. Was the TOC in the inception report peer-reviewed?	Y	
23. Was the quality of the draft/cleared report checked by the Evaluation Manager and Peer Reviewer prior to dissemination to stakeholders for comments?	Y	
24. Did the Evaluation Office complete an assessment of the quality of both the draft and final reports?	Y	
Transparency:		
25. Was the draft evaluation report sent directly by the Evaluation Consultant to the Evaluation Office?	Y	
26. Did the Evaluation Manager disseminate (or authorize dissemination) of the cleared draft report to the project team, Sub-Programme Coordinator and other key internal personnel (including the Reference Group where appropriate) to solicit formal comments?	Y	
27. Did the Evaluation Manager disseminate (or authorize dissemination) appropriate drafts of the report to identified external stakeholders, including key partners and funders, to solicit formal comments?	Y	
28. Were all stakeholder comments to the draft evaluation report sent directly to the Evaluation Office	Y	
29. Did the Evaluation Consultant(s) respond adequately to all factual corrections and comments?	Y	
30. Did the Evaluation Office share substantive comments and Evaluation Consultant responses with those who commented, as appropriate?	Y	

Provide comments / explanations / mitigating circumstances below for any non-compliant process issues.

<u>Process Criterion Number</u>	<u>Evaluation Office Comments</u>
11	A first consultant was hired in March 2021 to conduct this terminal evaluation. His work was not satisfactory. His contract was terminated before its end in June 2021. A new selection process of consultant was then launched. The contract of the selected consultant started in September 2021.